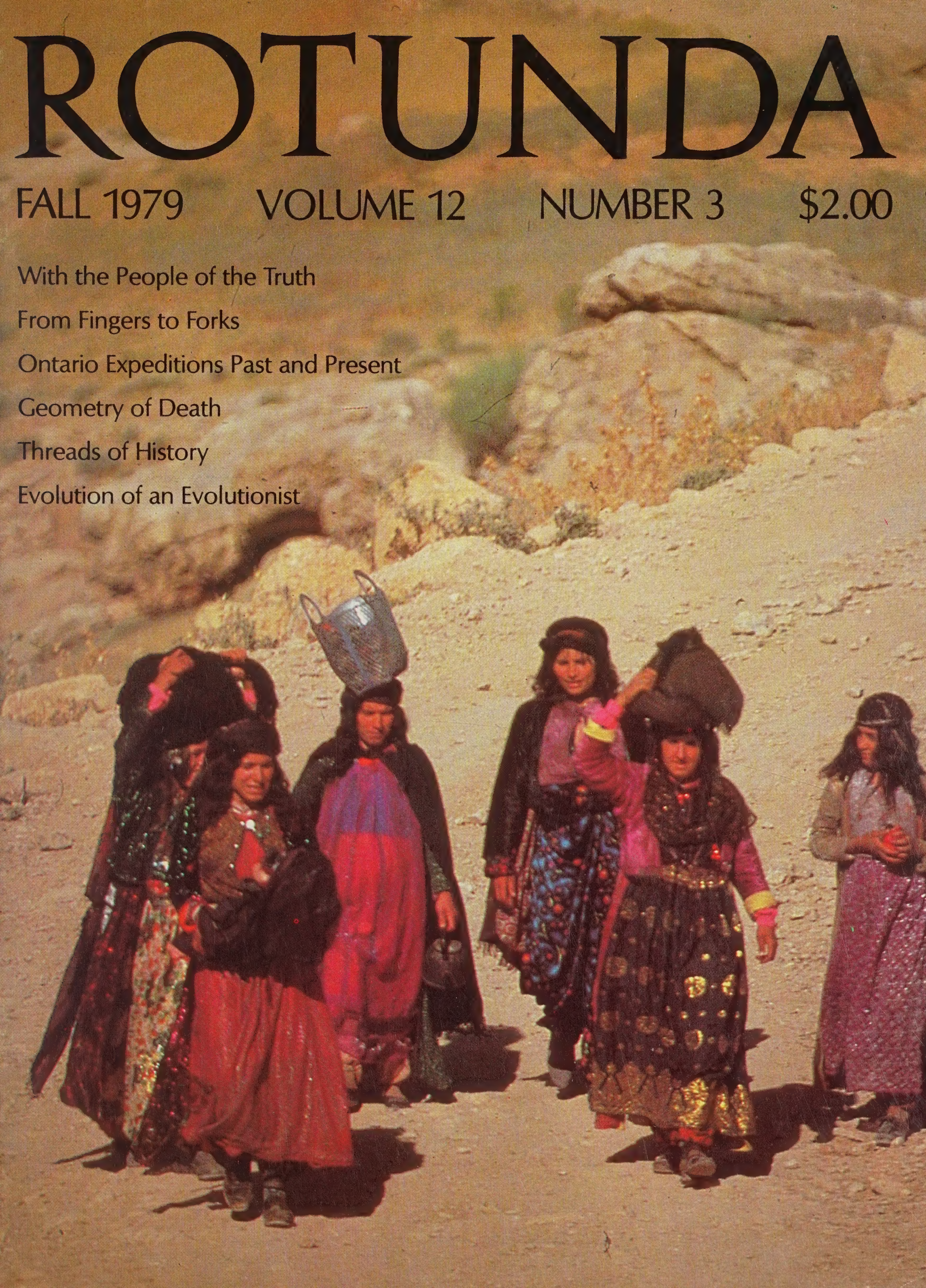
ROTUNDA

FALL 1979 VOLUME 12 NUMBER 3 $2.00

With the People of the Truth
From Fingers to Forks
Ontario Expeditions Past and Present
Geometry of Death
Threads of History
Evolution of an Evolutionist



Membership Information
The public is invited to join the Royal Ontario Museum and share in its activities. Membership includes free admission to the museum; a reduced admission charge to the public shows presented in the McLaughlin Planetarium; free subscription to ROTUNDA; invitations to previews of exhibitions and new galleries; exclusive access to licensed Members' Lounge; reduced admission to lectures; 10% reduction at Book and Gift Shops on purchases over $2.00; advance information on coming events. Annual Membership is $25 (individual), $40 (family); Life Membership is $500 and up. For further information write Manager of Membership Services, Royal Ontario Museum, 100 Queen's Park, Toronto, M5S 2C6, or telephone 978-3704.

ROTUNDA

the magazine of The Royal Ontario Museum

Volume 12, Number 3, Fall 1979

Focus *Mary Holford* 2

With the People of the Truth *Edward J. Keall* 5
The ROM in Kurdistan

Tribute to Veronika Gervers *John E. Vollmer* and *Lisa Golombek* 11

From Fingers to Forks *Jean Bacso* 12
European Knives and Forks in the ROM

Ontario Expeditions Past and Present *David Nagorsen* 20
The ROM's Provincial Mammal Surveys

Geometry of Death *Walter A. Kenyon* 26
The Neutral Indian Cemetery at Grimsby

The Growing Collections 33

Threads of History *Elizabeth A. Lewis* 36
The Fabric of Ancient Peru and Its Legacy

Evolution of an Evolutionist *Gene Wilburn* 44
Books That Influenced Charles Darwin

Cover: Kurdish women from Zardeh on their way to the open-air festival. (Photo: Edward J. Keall, ROM)

Picture credits: 36, 41 (bottom), 43 (top) Alex Beveridge; 25 (top) Brian Boyle, ROM; 28 (left), 29 (right), 32 Jim Chambers; 20 (bottom) Georgia Guenther, ROM; 26 (2), 27, 28 (right), 30 Walter A. Kenyon, ROM; 47 (left) Mansell Collection; 25 (bottom) Bruce McLean; 29 (left) Kathy Mills; 23 D. Muir, Toronto; 24 (top) David Nagorsen, ROM; 24 (bottom), R.L. Peterson, ROM; 2, 3 (2), 12, 13, 14 (3), 15 (3), 16 (3), 17 (3), 18 (2), 19 (top), 33 (2), 34 (2), 35 (2), 37, 40, 41 (top) Photography, ROM; 5 (2), 6, 7 (2), 8 (2), 9 (2), 10 (2) William C. Pratt, ROM; 46 (2), 47 (right) Radio Times Hulton Picture Library; 20 (top), 22 (left), 22 (right, taken by A.R. Van) ROM Archives; 44 (3), 45 courtesy of The Royal College of Surgeons of England; 21 Terry Shortt; 38 (2), 39 (2), 42 (2) Roger Yorke.

Published quarterly by the Royal Ontario Museum, 100 Queen's Park, Toronto, Ontario, M5S 2C6. Subscription $6.50 a year. Single copies $2.00 each.

© The Royal Ontario Museum, 1979
Printed and bound in Canada

ISSN 0035-8495
Second class mail registration
number 1531

Board of Trustees
Sydney M. Hermant, B.A., LL.D.
Chairman

Linda A. Camp
John H. Devlin
Ernest A. Du Vernet, Q.C.
Joan Fitzpatrick
James M. Ham, B.A.Sc., S.M., Sc.D.
Albert G. Hearn
Rodger E. Inglis, Q.C.
Richard M. Ivey, Q.C.
Vice-Chairman
J. Elizabeth Leitch, M.A.
Gerald F. Levenston, M.B.E.
Ronald L. MacFeeters
Corinne Matte
Marnie Paikin
David F. Quan
Elizabeth Rhind
Mary-O Rohmer
H.M. Turner, Jr.
Joseph A. Whitmore

James E. Cruise, B.A., M.S., Ph.D.
Director

Barbara Stephen, M.A.
Associate Director

C. Gordon G. Bristowe, M.V.O., C.D.
Assistant Director

R. McCartney Samples, C.M.G., D.S.O., O.B.E., B.Com.
Assistant Director

The Main Building
100 Queen's Park
Information 978-3690

Sigmund Samuel Canadiana Building
14 Queen's Park Crescent West

McLaughlin Planetarium
100 Queen's Park
Information 978-8550

Editorial Staff
John Campsie, *Editor*
Mary Terziano, *Executive Editor*
Christine Lockett, *Assistant Editor*
Lana duBois, *Editorial Assistant*
Marie Hands, *Designer*

Focus

On Uses of Lace and Net

Mary Holford

LACE AND NET have been used for both decorative and practical purposes for centuries. Various forms of netting and knotting were done by the ancients, but some of the earliest laces were developed from openwork embroidery in the 15th century to embellish church linens and ecclesiastical vestments. By the end of the 16th century lace had become an important ornamental feature of fashionable dress among men and women of the European nobility and upper classes. Because of its beauty and cost, lace was a symbol of status. During the second half of the 17th century it reached a point of unparalleled sumptuousness and its use, though not its production, had to be curtailed by laws and edicts. In some areas—the Lowlands and regions of France and Italy—lacemaking was vital to the economy.

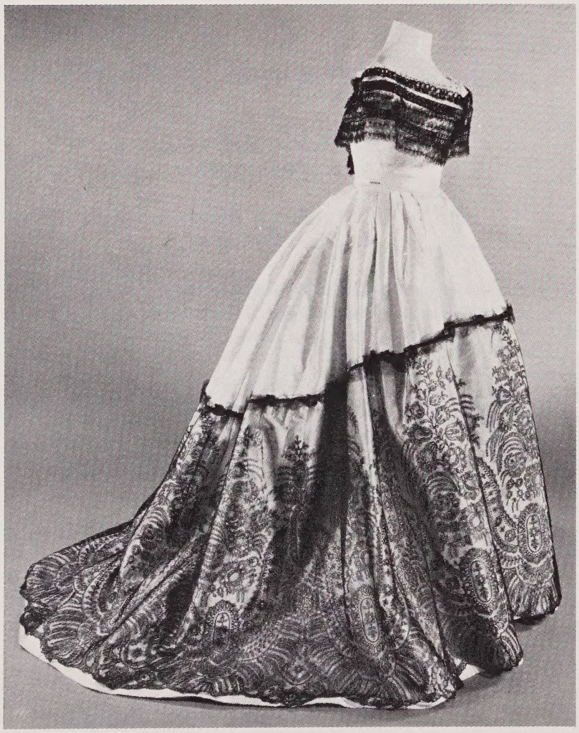
An exhibition, *Uses of Lace and Net,* drawn from the ROM's extensive lace and costumes collections, has been mounted in the Costume Gallery on the second floor. It reflects the techniques of lacemaking and the uses of lace through the last few centuries.

The motifs of many early handmade laces, whether worked with bobbins or with the needle (needlepoint), were joined by bars called brides. Gradually as the motifs became smaller and more separated, the brides were replaced by a connecting mesh or netlike ground.

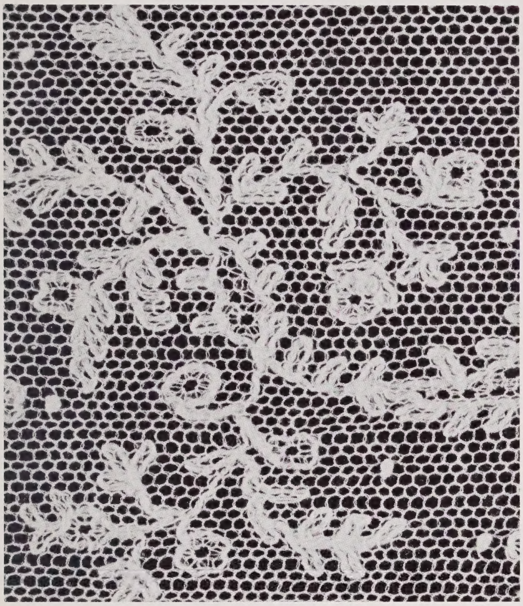
In some laces the mesh ground was worked in one piece with the motifs, but in others it was filled in afterwards and was often done as piece work—a technique invented in Brussels which made Brussels lace famous throughout the world. The man's jabot and other laces in the 18th-century cases are good examples of this type of lace.

In this group are a pair of sleeve ruffles shown on a rose moiré French dress of the mid-18th century. They are of a coarse hemp lace, known as *entoilage,* which was not suitable for very formal "full dress", although other pieces exhibited here were fine enough for that purpose. One of the ladies' butterfly caps has been reinforced or mended with a piece of net which appears to have been worked on some type of simple warp frame, as yet not identified. In 1754 Mrs. Mary Delaney, known for her informative autobiography and letters, referred to this style of cap, which she described as "a French cap that just covered the top of her head, of blond white lace and stood in the form of a butterfly with its wings not quite extended, frilled sort of lappets crossed under her chin, and tied with pink and green ribbons—a headdress that would have charmed a shepherd!"

Dominating the group of black laces is an early 19th-century Spanish mantilla of handmade bobbin lace worked in strips which were joined together invisibly. The joining was usually done by a special worker. The

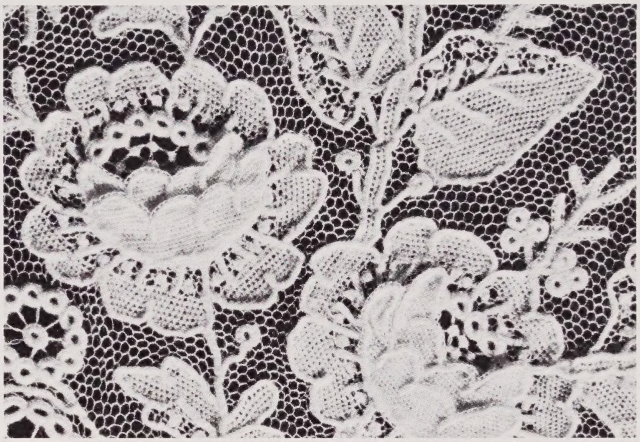


Ball gown (1860s) trimmed with machine-made Chantilly lace.



Left: *Detail of early 19th-century warp machine net (looped) with hand-run motifs.*

Below: *Detail of Brussels needlepoint lace,* point de gaze. *Motifs and mesh are worked in buttonhole stitch. Early 20th century.*



rectangular headpiece on the top edge of the mantilla is typical of the 19th century when mantillas were worn as fashionable, as well as regional, costume.

A shoulder cape called a pelerine-fichu is edged with a bobbin lace which was commonly known in England as "Revolution Lace" since it was first introduced from France during the revolutionary period. It was obviously well assimilated, for by the close of the Napoleonic Wars it was thought of as a typically English lace. The cape was given to the ROM by Miss Helen P. LeVesconte whose great-grandfather, Captain LeVesconte, had served at Copenhagen, St. Vincent, and Trafalgar before emigrating to Canada in 1828. It is quite possible that the cape was brought over here at that time.

Since the grounds of these handmade laces were tedious and repetitive to work, it became clear that much time and cost could be saved if the grounds could be manufactured mechanically. Inventors applied themselves to this task in the latter half of the 18th century. At first, machine net was attempted on the stocking or knitting frame, for stocking stitch resembled the looped buttonhole stitch of needlepoint lace. But because this net was worked with one long continuous thread, as in knitting, it unravelled easily and was very fragile. Early specimens of stocking-frame net are therefore exceedingly rare.

Much more satisfactory results were obtained on the subsequent invention, the warp-net frame (or warp-knitting frame), which produced sturdier, interlaced looped stitches. Since numerous warp threads were employed, snags and breaks were localized. There are several pieces and garments of warp-machine net in the ROM collection, but one of the earliest is a hand-run insertion on the front of a white muslin gown in the exhibit. It is dated about 1805 and was brought to Montreal by ancestors of the donor, Miss Joan Arnoldi. Another, slightly later, gown is made of a finer warp net of black silk. Three pairs of 20th-century black silk stockings are shown nearby as a reminder of the origins of mechanically made net.

John Heathcoat's invention of the bobbin or twist-net machine, patented in 1809, was a milestone in the production of machine-made net. From about 1815, this type of net was the most common, often with hand-run patterns in imitation of lace, or with applied lace motifs. After the mid-19th century, the complete design, including thick outline threads and picoted edges, could be incorporated mechanically, thus creating totally machine-made bobbin lace.

About 1851 wool lace, known as yak or llama lace, became popular, and it was available in fine or coarse texture. The llama lace shawl displayed is of a fine and delicate quality.

Machine-made lace and net have been used effectively in the present century by the celebrated Spanish couturiers Balenciaga and Pedro Rodrigues, as well as by Coco Chanel. Schiaparelli, with singular imagination, designed a dress made of string, which has been stitched down in the same way as tape lace, an example of which is shown in the table case.

The similarity between early needlepoint lace and some 19th- and 20th-century handmade laces is evident. Several attempts were made to copy the rich and heavy early needlepoint lace called *point de Venise*, which is illustrated in a 17th-century collar, with raised motifs and outlines, often described as carved ivory. The popular Irish crochet of the latter half of the 19th and the early 20th centuries is one example. A 20th-century handmade table runner and mats, portraying French châteaux, imitates other early laces. Some handmade and machine-made laces are displayed together for comparison, since many bobbin laces, particularly Chantilly, have been reproduced with incredible fidelity.

It was not until the close of the last century that needlepoint lace was finally produced mechanically. A method was developed in St. Gall, Switzerland, to imitate early *gros point de Venise*. It was known as "chemical" or "burnt-out" lace which may be seen on the Edwardian group of women's clothes in the exhibition. Chemically treated cloth, acting as a ground, was machine-embroidered and then dissolved by heat, so that only the bold, flowered motifs remained.

The use of lace as a source of design is evident on the brocaded silks of three of the 18th-century dresses. Its influence is also noticeable on a machine-knitted cotton gown of lacelike texture which is said to have been worn at the Duchess of Richmond's ball in Brussels on the eve of the Battle of Waterloo, June 18, 1815. Sheer silk gauze, woven with patterns resembling blonde lace, was very popular in the 1830s. A gauze dress and hat veil and a wedding dress with gauze sleeves are almost as light and diaphanous as the silk blonde nearby. In a reproduced portrait, Queen Adelaide of England is wearing sleeves of a similar fragile and fashionable lace.

An outstanding piece of lace has been lent for this exhibition by Mr. Garrett Tyrrell of Toronto. It is a wedding veil of Brussels needlepoint lace, *point de gaze* (an enlarged detail of this type of lace is illustrated), which is said to have been made for a member of the Spanish royal family before the First World War. It was not used, but remained in Belgium until the Second World War, when it was obtained by the present owner. Twentieth-century lace of this quality is rare. Such large pieces with a handworked ground are, as a rule, made only for the special use of royalty.

The materials in the exhibition are a tribute to the skill and patience of lacemakers and to the genius of those who invented machines capable of performing such intricate work. Untold hours of labour, often amid poor and unhealthy conditions, have been spent in the manufacture of this delicate and decorative fabric. Today revived interest in lace is universal.

The Textile Department is greatly indebted to Mrs. Edith Starink, Research Associate, for her valuable suggestions and active assistance in the planning and arrangement of *Uses of Lace and Net*. The exhibition will continue through November.

Mrs. Mary Holford is Assistant Curator in the Textile Department, in charge of fashion costume.

ROM Renovation/Expansion Fund Campaign

The generous response from those Members who contributed to the Campaign Appeal in *Rotunda* was greatly appreciated.

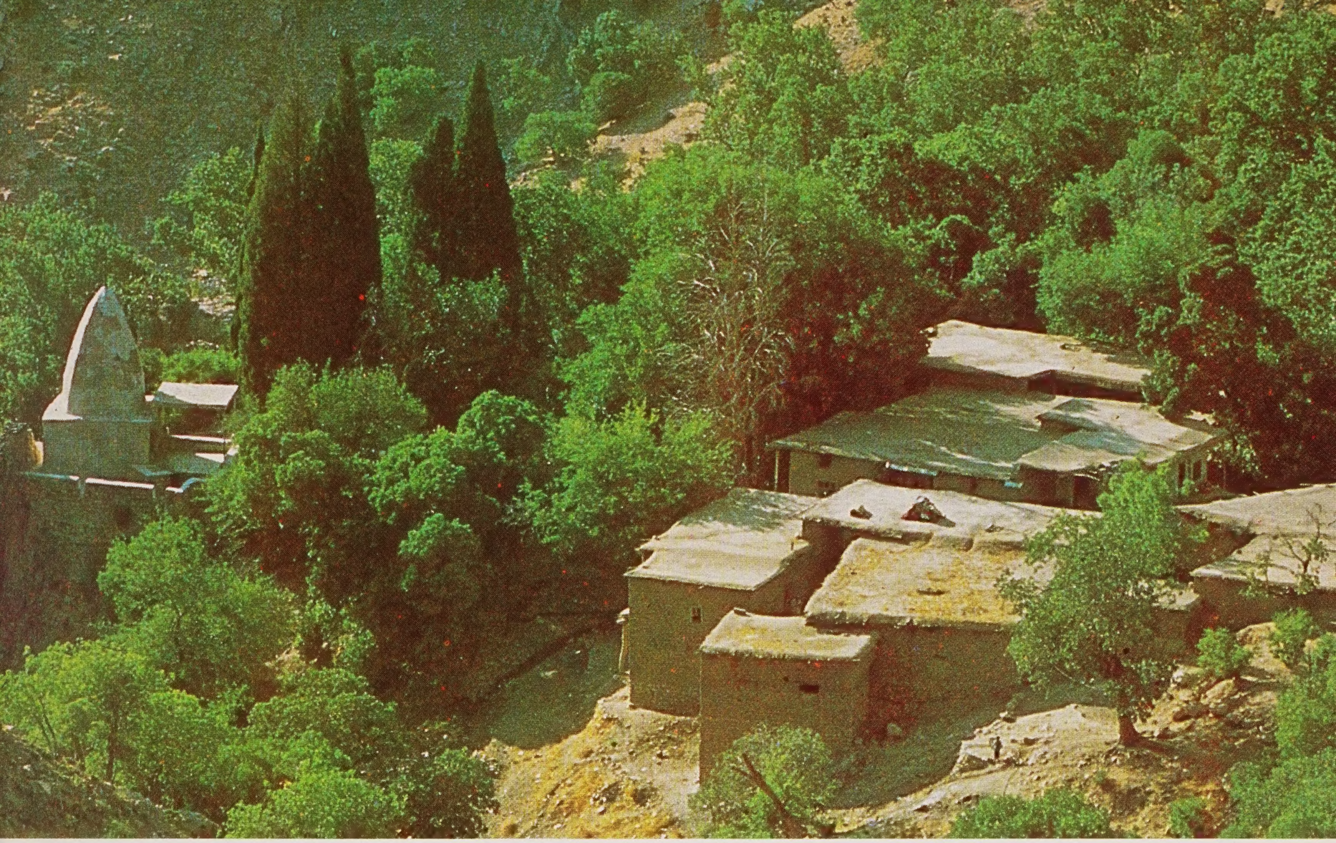
For those Members who have not given to date, there is still time!

Please send your cheque to:

ROM Renovation/Expansion Fund
100 Queen's Park
Toronto, Ontario M5S 2C6

Mona Campbell
Mona Campbell

John Devlin
John Devlin



The ROM in Kurdistan

With the People of the Truth

Edward J. Keall

EXPEDITION PROSPERS in mountain retreat." This seemed to be the most succinct way of letting those at home know that the 1978 expedition to Qal'eh-i Yazdigird was functioning successfully, in spite of the chaotic conditions that prevailed around us in Iran this past winter. This was the fourth ROM expedition to excavate the remains of a lavishly decorated mansion set in a fortified retreat of Parthian times, and at our dig in the Zagros Mountains of western Iran we were secure—for precisely the same reason that made the Parthian dissidents decide to fortify the area some 1,700 years ago. It is a natural stronghold, inaccessible except by one or two routes (only one a motor road), and perfect for holing up in and ignoring events on the outside. In the past it was a superb base from which to defy the central authorities not far away on the Mesopotamian plains below.

The unique hospitality afforded us by the local Kurdish villagers added to our security. In particular, "our man" in Zardeh, the nearby village, has always been extremely protective of the ROM expedition—to the point of acting like a mother hen. It is hard to explain

Top: White-domed shrine of Baba Yadgar in the gorge behind the ROM expedition house.

Bottom: A Kurdish workman and the author perch on the cliffs forming part of the Qal'eh-i Yazdigird stronghold.

how reassuring such hospitality is, in good times and bad, or even why it exists.

Possibly it stems from the religious beliefs of the people of the area. They are Ahl-i Haqq, that is the Worshippers or People of the Truth, a heterodox Muslim sect with very few of the standard practices of Islam. These people, no matter how religious, never pray in conventional Muslim fashion. For them an act of devotion is signified by a pilgrimage to a local shrine, which can be a daily occurrence, or better still, by a visit to one of the great Ahl-i Haqq shrines of Kurdistan. Our local shrine of Baba Yadgar, which is a stiff half hour's walk up the mountain path behind the dig house, happens to be one of the most important.

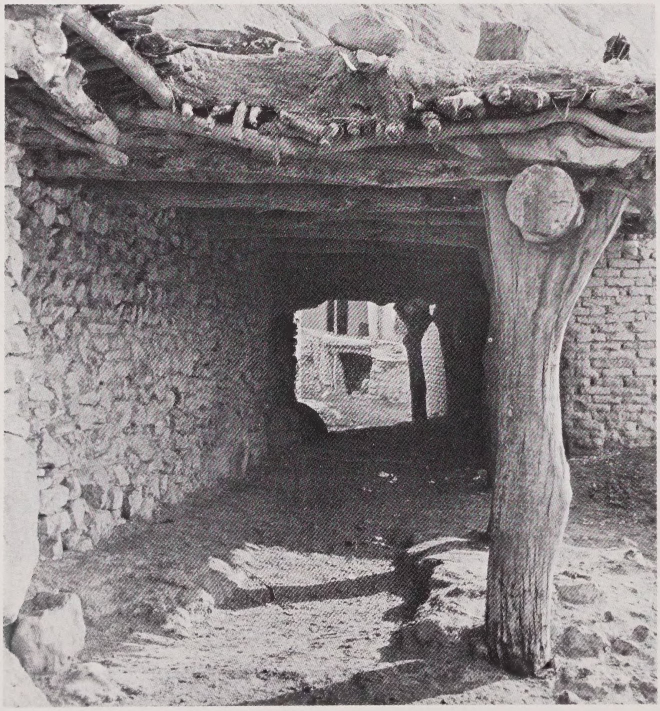
The Ahl-i Haqq are a dervish sect, but that is not to say that they are the eccentric, masochistic types to be found elsewhere in Kurdistan. They do not puncture themselves with needles or slash themselves with knives, but they do indulge in mesmerism. There is a special rhythmic music used in secret meetings to help induce a trance—and no doubt they also smoke something.

The meeting house for the dervishes in the nearby town of Sar Pul-i Zohab provides a community base for the sect, as well as a station for vehicles going up to the village and the shrine. In 1976 when the meeting house was undergoing renovations (the dervishes were profiting from Iran's economic explosion of the seventies to replace their wood and mud roof with steel I-beams and asphalt), we managed to buy their old roof beams at a good price. They are painted a "devout" green, and the dervishes were persuaded to sell them to us only because the timber would be returning to the land of Baba Yadgar.

We began the ROM dig house in 1976, using local materials and traditional Kurdish building methods. In this part of the country, buildings are generally constructed of stone, since the scarcity of soil tends to preclude the use of sun-dried bricks. In any case, the stone provides a better footing for the walls in wet weather. The roughly trimmed stone, quarried from nearby exposed limestone scarps, is laid with small stone packing and mud-straw mortar. Once dry, the clay-filled mortar gets as hard as rock in the hot summer sun. It becomes alarmingly tacky, however, after prolonged winter rains, and driving wet winds begin to dislodge pieces of the mortar. The available soil is reserved for the roofs, which are flat and capped with mud, a perfect medium for most of the year since it is cheap and provides insulation. However, if the roofs and walls become saturated with water, entire villages sometimes collapse.

In Kurdistan there is no tradition of dome building in domestic architecture, as there is on the desert side of the mountains where trees are scarcer. Domes in Kurdistan are reserved for shrines. For the houses, flat wooden beams are placed directly on top of masonry walls. Oak beams used to be culled from the natural forest, but now it is easier to grow poplar near the village than to haul lumber down from the mountains by mule.

In this region of Iran the rains traditionally cease 40 days after the spring equinox, and there will not be a drop of rain until the following November. It is when



Post-and-beam construction in a covered passageway in Zardeh.

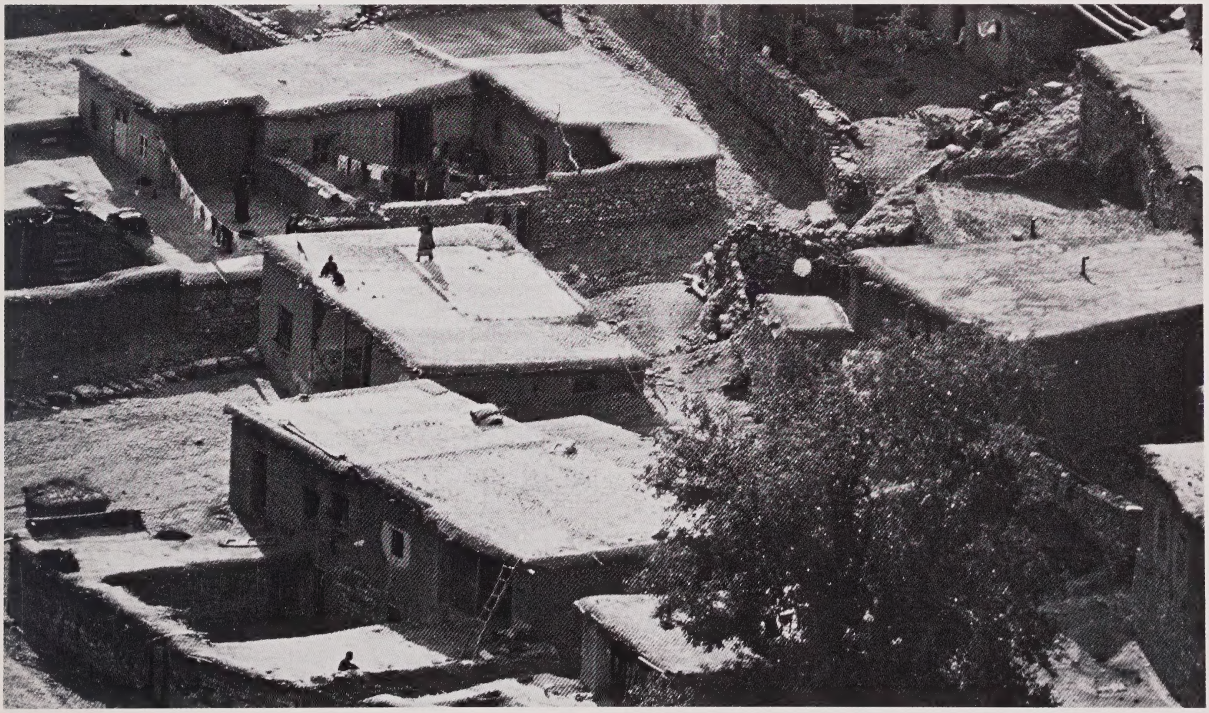
the spring rains end that half the village sets out with the sheep to the summer pasture in Dalahu, the high mountain reaches behind the village. The sheep must be moved to fresher pasture on high ground so that they will keep producing milk. Since goats can produce milk on much scrubbier vegetation, some of them are left behind to support the villagers who stay to tend the wheat fields and the orchards. The tent people return in autumn, grazing the stubble before the rains drive them down to the village, where the cycle of ploughing and sowing begins once more.

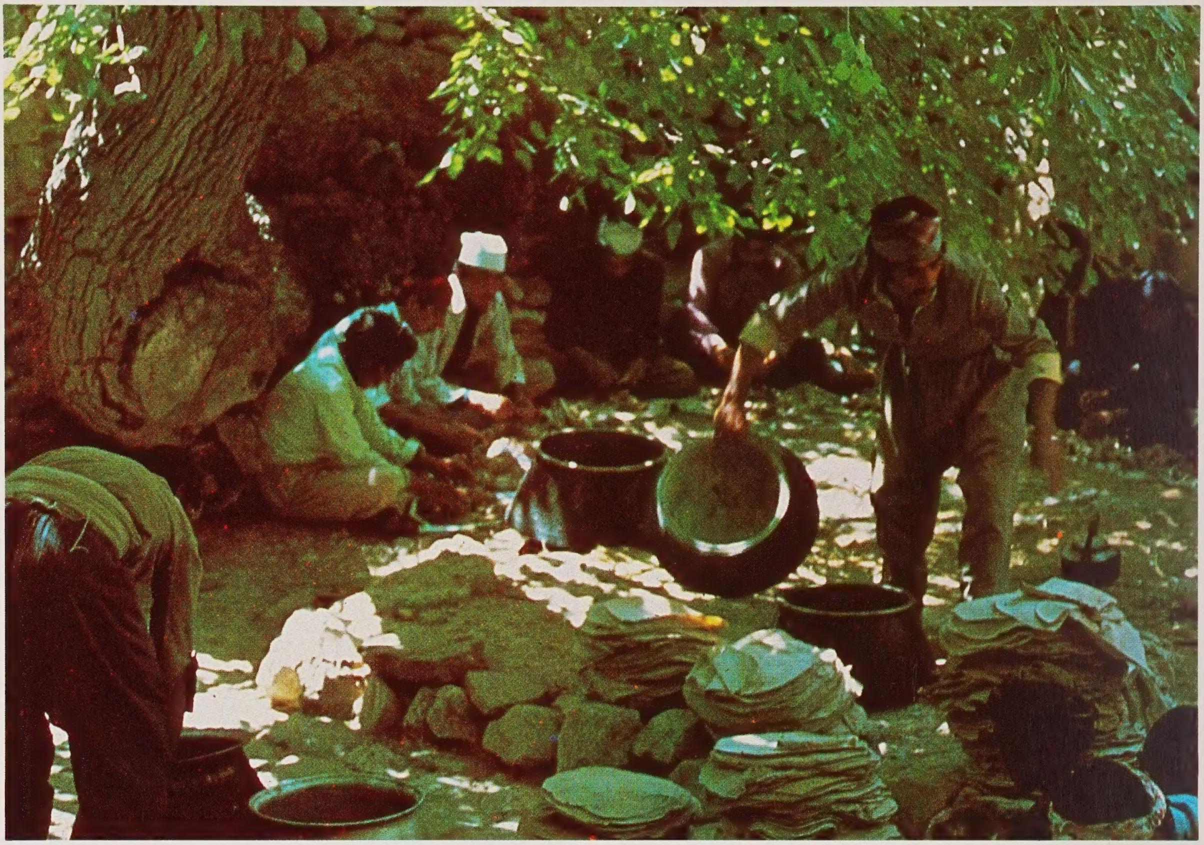
Cultivation plays an important role in the lives of the villagers. The poplar groves provide roof beams, and the orchards yield a late summer harvest of grapes, figs, walnuts, and pomegranates. The fruits are dried and stored to add an all-important dietary supplement to the whole-ground wheat which is the main food staple. Diets are also given a boost in spring when wild onions and other greens are gathered in Dalahu before the flocks denude the landscape. Rice is a luxury, and meat is rarely eaten. It is ironic that the meat producers eat little of the meat they raise. Animals are kept for their milk and wool, or for cash sale.

Wool is one of the most important products of the flocks. Tartan blankets and *kilim* mats are made by the women of the village, while the raw material for shepherds' felt coats and for pile rugs is taken to town to be manufactured into the finished items by male craftsmen. Incidentally, in their relations with the townspeople, the villagers make every effort to deal only with people of their own religious persuasion and background.

Top: Roughly trimmed limestone is set in mud and straw mortar for the ROM expedition house.

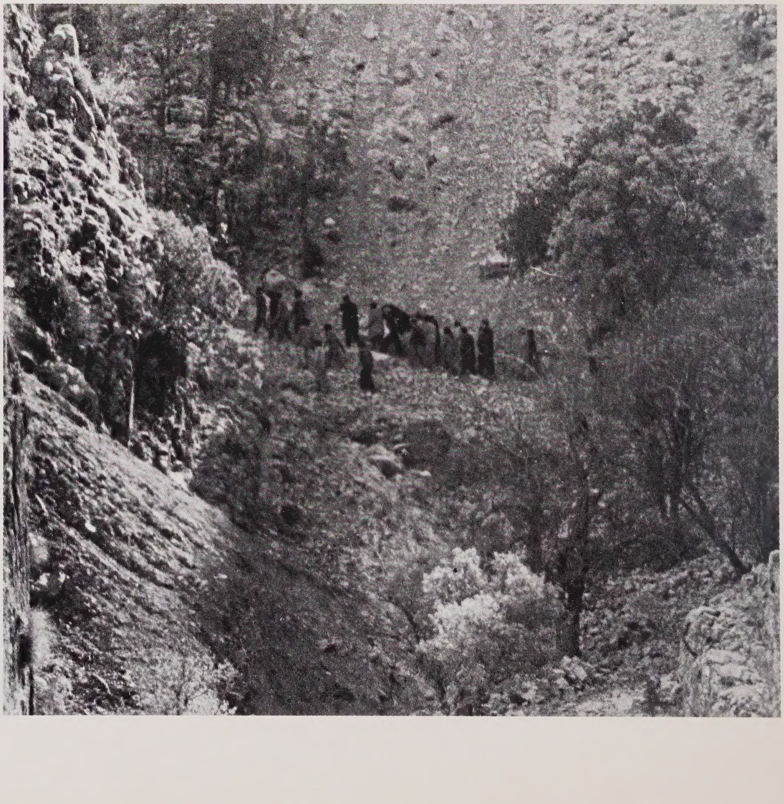
Bottom: Flat roofs of the nearby Kurdish village of Zardeh.

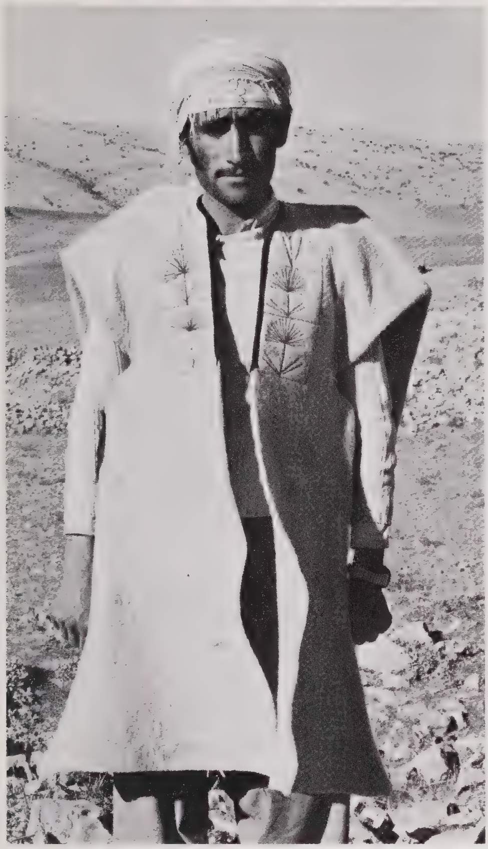




Above: Ritual festival in the open-air shrine at the foot of the gorge behind the expedition house.

Right: Funeral procession of dervishes to the shrine.





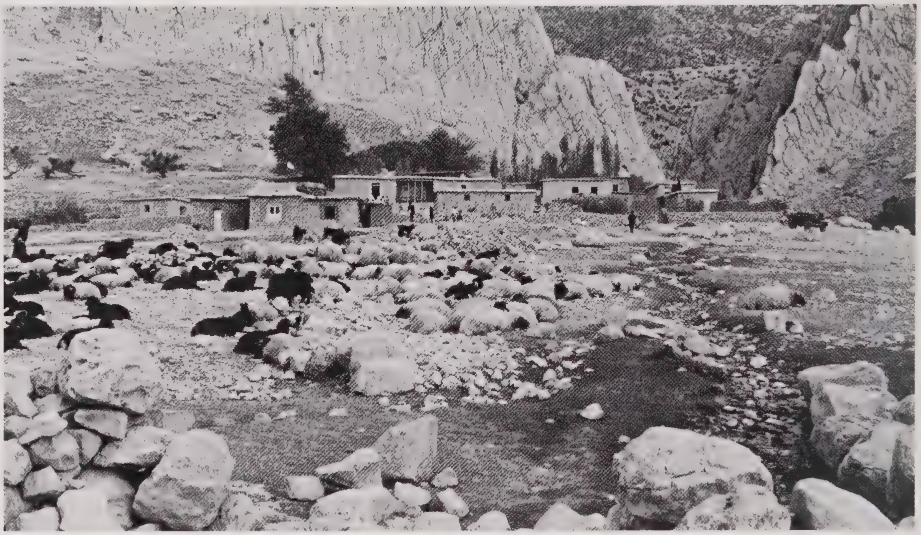
Left: Shepherd's felt coat (faranji) *worn by one of the expedition's workmen.*

Below: Sheep and the expedition jeep compete for space along the lane through the orchards.

Strangely enough, Iran's rampant development of the seventies has affected even the villagers of this remote area. There are two villages in our immediate neighbourhood—Zardeh, which should be richer because of its good water supply, wheat fields, and orchards; and Sayyid Muhammad, which should be poorer because it has no water in summer and is entirely transhumant. Under present conditions, the reverse is true. Inflation and consumer demand have increased dramatically the price of fresh meat—and in particular the price of *roghan*, the traditional cooking oil which comes from fat-tailed sheep. Although the country is now dependent upon vegetable shortening, *roghan* is considered a luxury and brings very high prices at market. Thus it is the inhabitants of the seemingly poorer village who have benefited most from the inflationary trend since they farm nothing but flocks of sheep and goats and have good grazing in spring right outside their back door. To reach open pasture, the people of Zardeh must drive their flocks past orchards and fields for more than an hour. The milk yield is poorer, the lambs fatten less well, and generally the animals are less productive than their cousins at the far end of the valley.

As it turns out, it is the inhabitants of Sayyid Muhammad who have the capital to invest in government loan schemes to buy tractors. Although ploughing is still done with mules by the poorer villagers, and in those areas inaccessible to tractors, mechanized ploughing (and threshing) has become a way of life in the past two years. The services of a tractor are rented out by the acre. Now that new families are getting richer, there is a danger that the new wealth will be put to increasing the size of the flocks. Larger flocks would seriously jeopardize the delicate balance of the environment. As it is, in dry years shepherds resort to cutting branches from the forest to keep the sheep in milk. With larger flocks there will be severe overgrazing and soon nothing left to support them.

The shrine too is benefiting at the moment from the recent economic growth. With better roads and transportation there are more pilgrims from outside. Interestingly enough, dervishes make money not so much from the donations as from a secondary source—the sale of the skins of the animals sacrificed by the pilgrims. Such sacrifices are the most conspicuous of the Ahl-i Haqq practices. They are performed at weddings and funerals, and at the four summer festivals celebrated by the entire village in the open air at designated locations near the village. A subclan of the village—the Sayyids—performs the necessary rituals for baking the special bread and preparing the meat. Small pieces of the sacrifice, wrapped in a flat pancake of bread (leading to our irreverent term "sacrifice



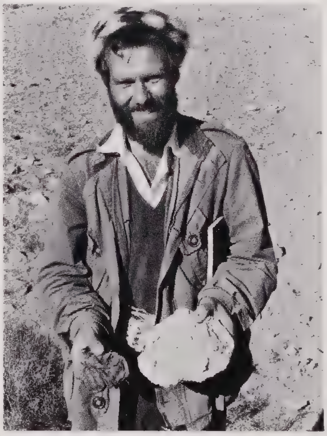
Flocks waiting for water to be diverted down the jube (channel at right) in front of the ROM expedition house.

sandwich") are given to anyone in the community. Anyone who does not wish to have a "sacrifice sandwich" should not throw it away but should give it instead to some other appreciative person. The recipient kisses the offering as a blessing.

Kissing plays an important role on pilgrimage. Various boulders and trees are kissed along the journey up to our local shrine. This is not the worship of idols, but rather a gesture to mark a significant stage in the journey, such as the first sighting of the shrine's dome. The white dome has a curious connection with the antiquities of the site, for in the past when the dome needed a facelift, the Head Dervish would exhort the villagers to dig up some of the stuccoes which the ROM is now involved in excavating. The stuccoes were smelted down and used as fresh plaster. Today the villagers are still reluctant to whitewash their houses for fear that they might seem to be imitating the custom of the shrine.

A smaller open-air shrine marks the source of one of the springs that provides the village with most of its water, and offerings are often placed in the water itself. A branch of the stream, called a *jube,* runs through the ROM compound. The branch is an artificial watercourse, subject to being switched on and off by the *jube*-man, who diverts water as prescribed on a weekly cycle to the various orchards and fields. In winter there is a surplus, so that there is always a trickle of water in our channel. But in summer there are times when the water has to be diverted completely by the *jube*-man. Freshwater crabs scuttle under large boulders to take shelter. Then, with an unannounced rush, the full force of the stream is felt in another field as it becomes the recipient of the life-giving water. When it comes down to it, putting politics and religion aside, it is the *jube* that is the mainstay of the lives of the People of the Truth.

Edward J. Keall, who joined the ROM in 1971, is Associate Curator in the West Asian Department. He first put Qal'eh-i Yazdigird on the archaeological map in 1965 when a Fellow of the British Institute of Persian Studies. The first ROM expedition to the site was in 1975, and in the following year the dig house was begun. The most recent season of work, supported in part by a generous grant from the Canada Council, ran from October 1978 to January 1979, continuing until after the Shah had left the country. The Kurds of Zardeh are keen to see the ROM return, and the author is hopeful that eventually this will be possible through normal diplomatic channels.



Tribute to Veronika Gervers

A MUSEUM'S COLLECTIONS are the treasures that distinguish it in the world, but it is the curatorial staff that breathes life into them. With the death of Dr. Veronika Gervers on July 21, the Royal Ontario Museum lost one of its most accomplished young scholars and a humanist of great sensitivity. Veronika's life revolved around her work, and her work gave meaning to life both past and present.

Scarcely a member of the Museum staff did not know Veronika, and all of us came to treasure her for her warmth and sparkle and for the myriad ways in which she enriched our lives. Her unflagging sense of responsibility towards people and towards her work will serve as a beacon and give us courage to go on.

Veronika, who joined the Textile Department in 1968, embodied the very best professional standards and worked with zeal and dedication to develop and shape the textile collections of the ROM. She applied the highest scholarship to researching and interpreting those collections, sharing her knowledge in numerous gallery displays, public lectures, and published articles in English, French, and Hungarian.

Three outstanding collections will endure as Veronika's legacy. Drawing on her Hungarian origins and her training as a medieval art historian and archaeologist at the University of Budapest, Veronika continued to explore her own heritage. Starting with the ROM's rich Eastern European regional costume collections, she initiated a disciplined collecting program and concentrated her research on a characteristic Hungarian shepherd's mantle. Her monograph *The Hungarian Szür: An Archaic Mantle of Eurasian Origin* (ROM, 1973), which reflects her rare imagination and exhaustive search of art historical, archaeological, and literary evidence, stands as a major contribution to costume history studies.

Her field work in rural Turkey in 1971 led to the development of a major felt collection for the ROM and, more important, to the documentation of disappearing felt-making traditions. To complete this study, Veronika and her husband, Michael, returned to West Asia three times. Veronika's contribution on felt-making to the 1978 travelling exhibition *Yörük: The Nomadic Weaving Traditions of the Middle East,* organized by the Carnegie Institute of Pittsburgh, established her as the leading authority on the subject and introduced to the public the singular ROM collection of felt.

Her interest in archaeological textiles from the Mediterranean began with the magnificent early Christian collections established by the first ROM director, Charles T. Currelly, in 1910. She was editor of *Studies in Textile History in Memory of Harold B. Burnham* (ROM, 1977), for which her own contribution dealt with a major 6th-century curtain in the collections.

In 1978 Veronika was successful in securing for the Museum one of its most exciting acquisitions. The Michel Abemayor collection of early Christian and Islamic textiles acquired through the generosity of Messrs. Albert and Federico Friedberg, numbers almost 1,200 items ranging in date from the 4th to the 14th century. Today the ROM holding is the most comprehensive collection of archaeological Mediterranean textiles in the world.

Veronika Gervers, Associate Curator, Textile Department.

With her characteristic enthusiasm, Veronika had already begun the mammoth task of cataloguing and researching this collection. At the time of her death, she was discussing with her colleagues at the ROM a major international travelling exhibition of archaeological textiles and textile technology of the Mediterranean world. There could perhaps be no more fitting memorial to this fine scholar, generous friend, and dedicated teacher than the realization of this dream. In the meantime, a memorial fund, the ROM Gervers Research Fund, has already been established.

Although all of us are diminished by Veronika's death, her life will continue to enrich us. Her scholarship will guide future generations of students. Her collecting achievements will gain international recognition for Canadian museums and inspire the ongoing scholarly search for knowledge. For those of us who knew her, Veronika's warmth, integrity, and generosity of spirit will continue to delight and challenge us to carry on the tradition of excellence she embodied in every aspect of her life and work.

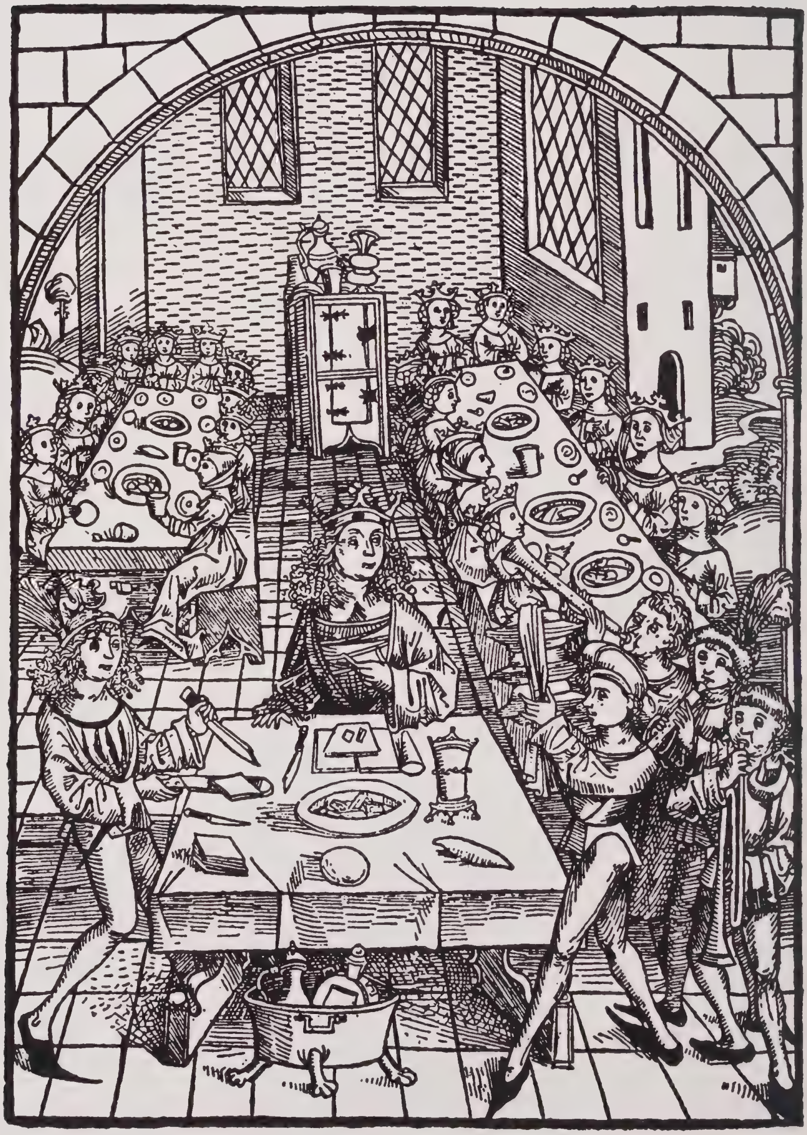
John E. Vollmer and *Lisa Golombek*

From Fingers to Forks

European Knives and Forks in the ROM

Right, Plate 1: "The King's Banquet", woodcut by Michael Wolgemut, Nuremberg, 1491. The attendant on the left holds a serving knife in his right hand and a carving knife in his left. Beside the king's trencher is a smaller eating knife. The diners at the other tables have only spoons.

Opposite page, Plate 2: Holbein dagger. The gilt-brass sheath pierced with the "Dance of Death" design has two small compartments for an eating knife and a sharpening steel. Swiss, mid-16th century.



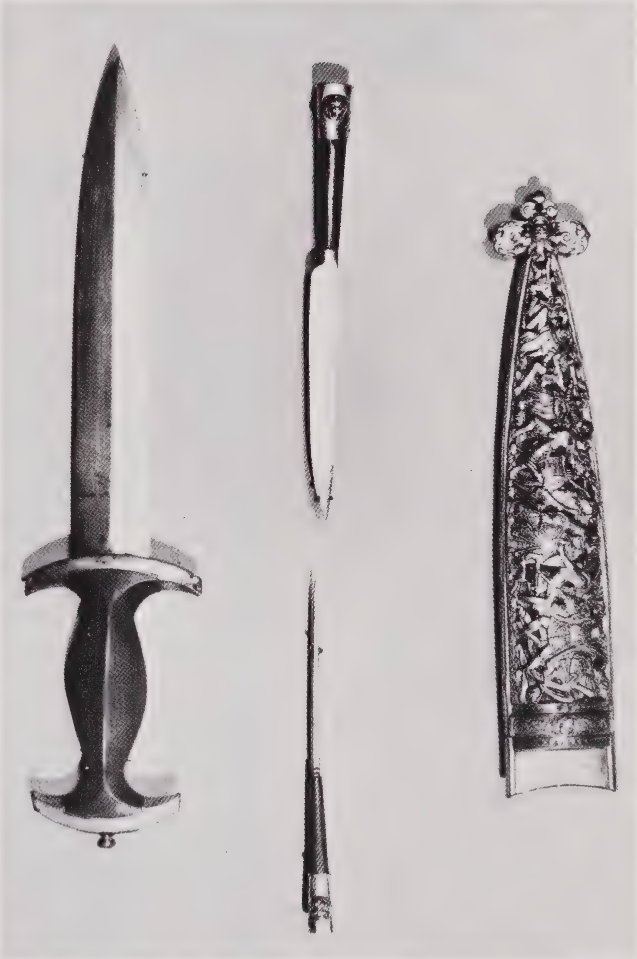
Jean Bacso

WHETHER WE EAT WITH OUR FINGERS, with chopsticks, or with other utensils is determined by our cultural environment. In the western world today most people use knives, forks, and spoons, and their specialized offspring such as fish knives, dessert forks, and sauce ladles. While both the spoon and knife go far back into the past, the fork is a relatively recent arrival at the table. In addition to their primary utilitarian worth, these objects, often made of fine materials and ingeniously embellished, have an intrinsic value and a visual appeal, which have contributed to their preservation.

Few knives survive from before the 14th century, but from then on our knowledge of medieval eating habits and utensils increases—from illustrations in manuscripts, paintings, and prints and from references in inventories and instructional books of etiquette. The elaborate table service in an aristocratic medieval household involved a large number of retainers, as well as guests. One attendant, the carver, was responsible for cutting portions of meat with a large pointed carving knife; another, the server (or sometimes the carver himself) placed the food on the diner's trencher, using a broad-tipped serving knife (Plate 1). Originally the trencher was a conveniently edible piece of stale bread, which by the early 16th century had generally been replaced by a flat wooden platter. A spoon and bowl were used for very liquid foods; morsels in communal dishes were plucked out with the fingers or a small pointed knife and eaten with the fingers. Such eating habits necessitated due attention to cleanliness; thus before and after meals and between courses attendants poured water over the diners' hands (the water dripped into basins placed under the hands).

Since a host did not normally provide knives for his guests, it was up to each diner to bring his own. Many early illustrations suggest that not everyone at the table had a knife, but by the 16th century the use of a small eating knife (often carried in a sheath alongside a dagger) seems to have become widespread. A 16th-century Swiss dagger, the Holbein, was named for the design on the sheath, based on Holbein's "Dance of Death". The Holbein sheath had compartments for a dagger, a knife, and a sharpening steel (Plate 2).

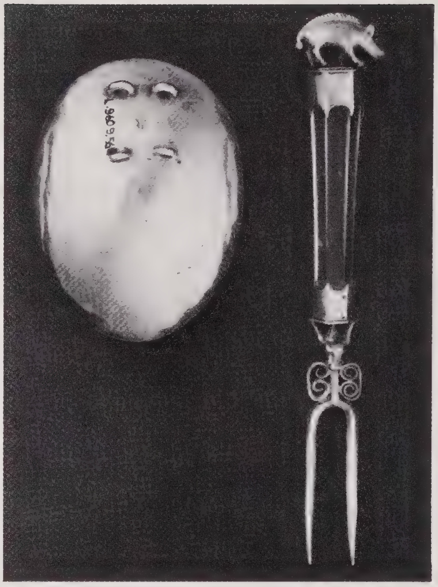
A number of Continental knives, especially those made in pairs for carving and serving, have survived from the 15th and 16th centuries. They are treasured for their beautiful handles of ivory, brass, or silver, often enriched with col-



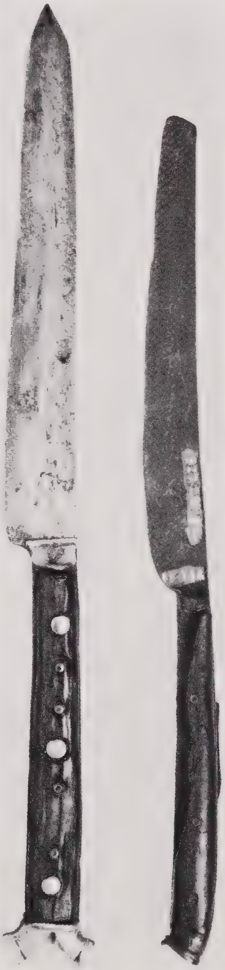
oured enamels. Knives of similar craftsmanship were less common in England, but numerous small knives of modest appearance, excavated in the course of modern building, still exist (Plate 3).

During the tumultuous social changes of the 16th century, when the enormous feudal household was disintegrating, the complex etiquette of dining changed and the positions of carver and server were eliminated. Simpler dining arrangements evolved, and it became customary for a wealthy establishment to provide each guest with a knife, from a cased set with matching handles.

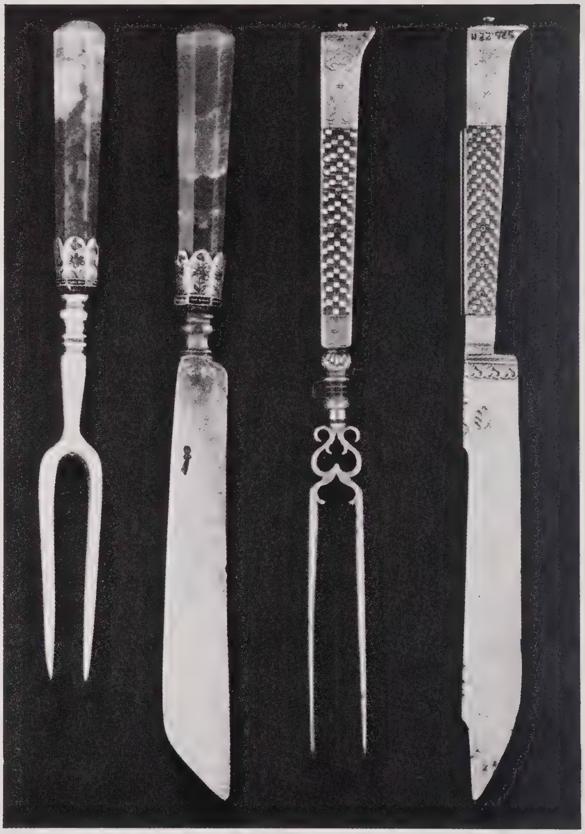
Although the fork was certainly known in Europe in the Middle Ages, its use was very limited; infrequent references specify that it was employed for eating preserved fruit, for toasting cheese, or sometimes for holding meat while it was being carved. It therefore seems surprising that the custom of eating with a fork did not evolve in Europe. It was a convention that came from the Middle East, where it seems to have originated at the Byzantine court in the 11th century. The use of forks spread slowly westward and by the late



Top, Plate 4: Combination fork-spoon with rock crystal handle and silver-gilt mounts. German, late 16th century. The short prongs and overall delicacy of this combination utensil suggest that it may have been used for eating dainty food such as preserved fruit, but it may also have been simply a convenience for travellers. The Lee of Fareham Collection.



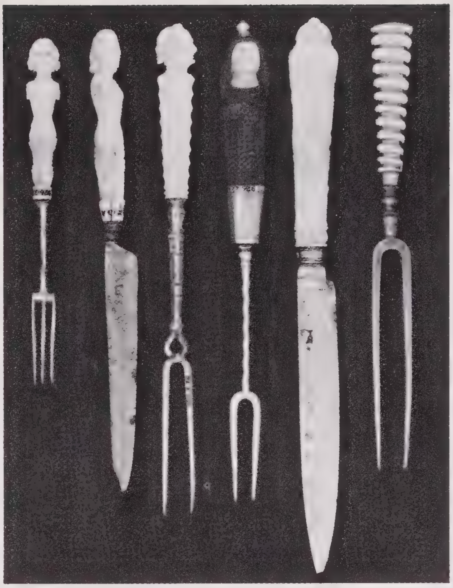
Left, Plate 3: Two 16th-century English knives found in London excavations. The handles are faced with wood scales secured with brass rivets.



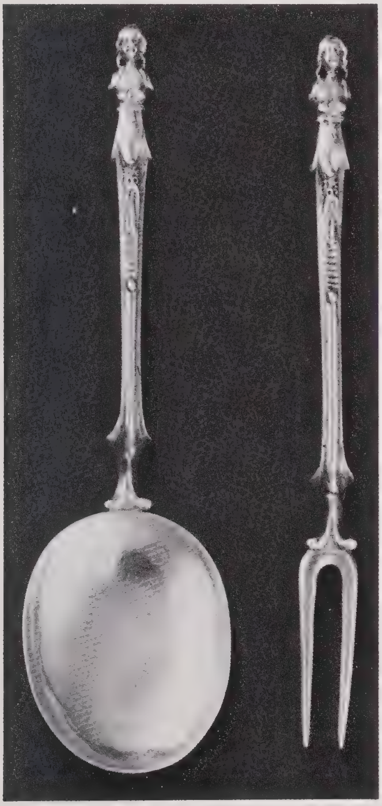
Right, Plate 5: On the left a knife and fork with octagonal chalcedony handles ornamented with champlevé enamels on the silver-gilt ferrules; German, first half of 17th century. On the right a knife and fork with engraved brass handles inlaid with a chequered pattern of horn and white and green-stained ivory. The blade bears the stamp of Nuremberg, a great blade-making centre of Europe. German, early 17th century.

15th century had been adopted in Italy. Northern countries, including England, were slower to embrace this new utensil. By the early 17th century it was generally recognized as a useful novelty, though especially in England its use was often ridiculed as an affectation more suitable for foreigners. Thomas Coryate, the Englishman said to have introduced the use of the fork to England from Italy in 1601, was satirized as "the fork-carrying traveller". His response was to point out the logical reason for employing the fork: the Italians used it, he said, because they could not tolerate having their food touched by unclean fingers.

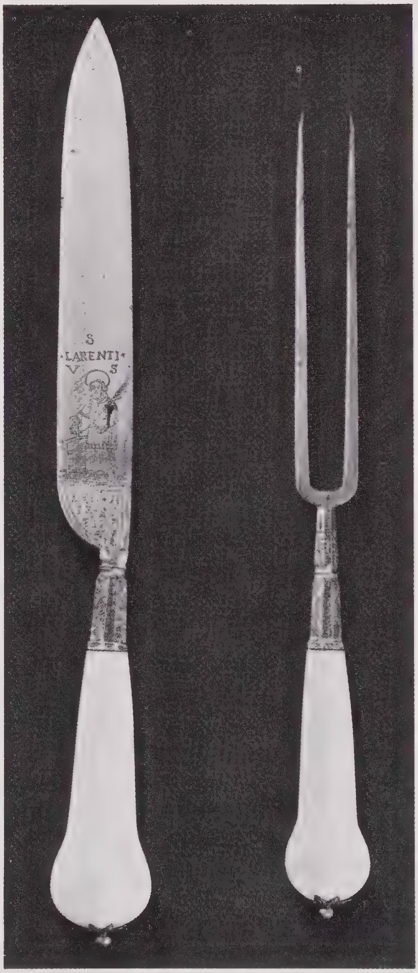
In the late 16th and early 17th centuries some curious fork-spoon combinations were made, with the short curved prongs of a fork fitted into loops on the back of a separate bowl to create a spoon (Plate 4). Aside from these fork-spoons, early forks had characteristically two long, straight steel prongs with sharp points. The number of prongs is, however, no yardstick of date. Though two prongs were most common until the late 17th century, they survived well into the 18th, when three prongs were flourishing, and the four-pronged



Top, Plate 8, from left to right: Knife and fork with ivory handles in the form of male and female figures emerging from acanthus foliage; probably Flemish, second half of 17th century. Fork with the end of the scale-cut ivory handle carved with a man's head backed by a skull; probably German, second half of 17th century. Fork with woman's face in ivory set in the carved amber handle; German, second quarter of 17th century. The silver prongs are a later replacement. Knife with tapering cylindrical ivory handle carved in low relief with scenes from the Garden of Eden; German or Dutch, late 17th century. Fork with ivory handle spirally grooved to house a silver band; probably German, second half of 17th century.

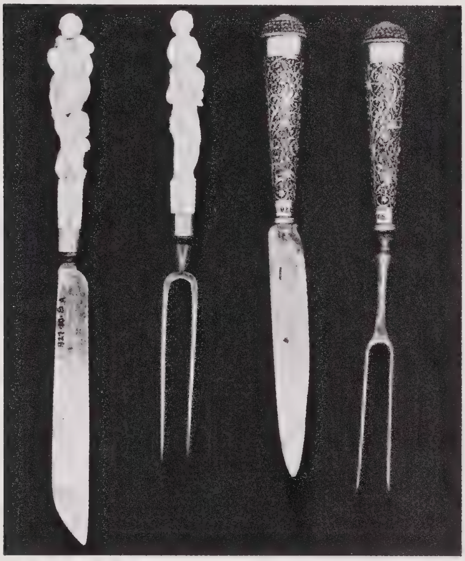


Above, Plate 6: Silver-gilt spoon and fork with handle terminals in the form of armless nude females. German, Munich, by Stephan Hoetzer, second quarter of the 17th century. Gift of Mr. R.G. Meech.



Left, Plate 7: Carving knife and fork from a set of nine slightly smaller knives and forks. On the knife, below the engraved figure of St. Lawrence, is the maker's name, Lorentz Steinhauser; German, dated on the blade 1638. Gift of Mrs. Marian Bradshaw in memory of her father, Major James Hahn.

Below, Plate 9: *On the left a knife and fork with ivory handles carved with clambering children; Italian, second half of 17th century. On the right a knife and fork with gilt handles overlaid with silver filigree; probably German, early 18th century.*



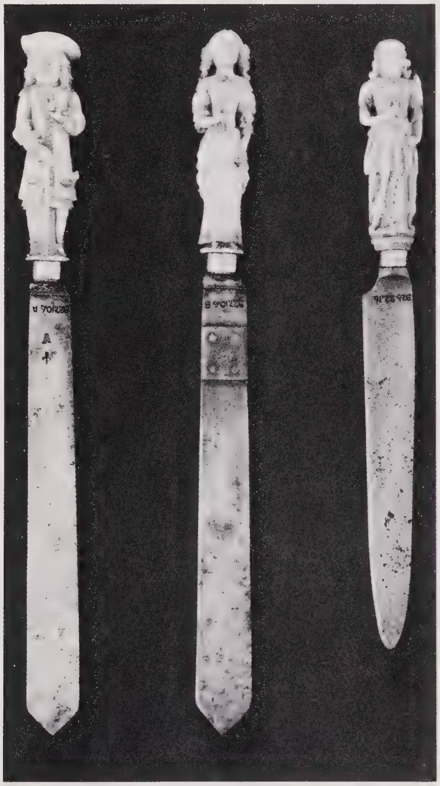
type, characteristic from about 1760 onward, is found as early as the 1660s.

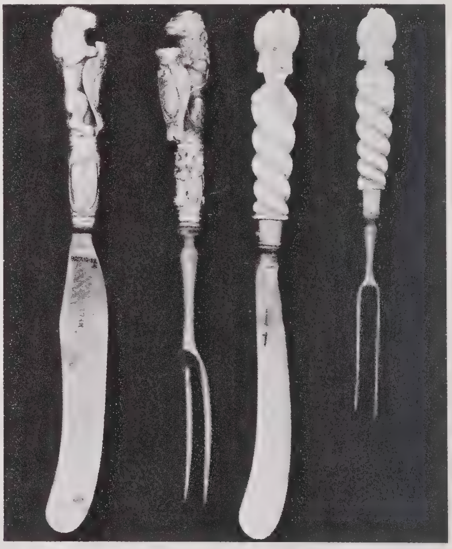
As its use grew, the fork found itself naturally paired with the knife, with matching handles often richly decorated. Most surviving pairs of knives and forks date from the 17th century, with favourite handle materials of agate, ivory, crystal, amber, brass, and silver (Plate 5). At first spoons were seldom made to match knives and forks. The rare silver-gilt spoon and fork with matching handles showing late Mannerist influence were made in Munich in the second quarter of the 17th century (Plate 6).

Sets of up to a dozen matching knives and forks came into use in the second half of the 17th century. Plate 7 shows a carving knife and fork from an early set which included nine table knives and nine forks. They have plain, tapering, octagonal bone handles with bulbous ends and engraved brass ferrules. The knife blades are engraved with figures pairing the sacred and the profane: on one side of the blade there is a representation of a saint (a different one for each knife) and on the other side a drinker holding a wineglass. Carved ivory was especially popular for handles during the second half of the century. Often carving took the form of figures in the round (including nude images), figures in contemporary dress, and personifications of the Virtues (Plates 8 to 11).

Although forks spread from aristocratic to humbler society in the second half of the 17th century, their use

Right, Plate 10: On the left two knives with ivory handles carved with figures in the dress of the 1670s. One blade bears the mark of the London Cutlers' Company. English, c. 1670–80. On the right a knife with an ivory handle carved in the form of Apollo holding his bow and a sun emblem. Dutch, c.1680.



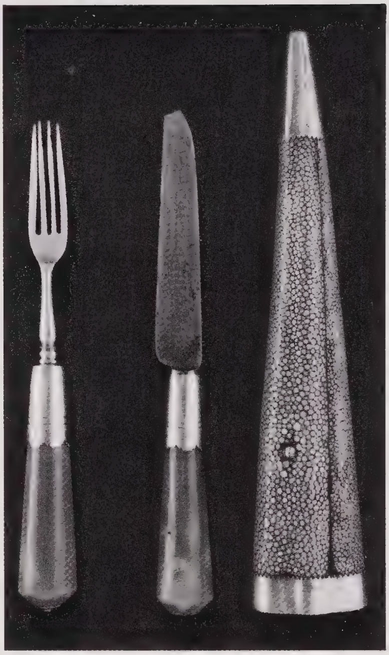


Above, Plate 11: On the left a knife and fork with silver-gilt handles in the form of a lion supporting a coronet above a shield engraved with a crest; probably French, late 17th century, English blade and prongs of the mid-18th century. On the right a knife and fork with ivory handles carved with the heads of an Indian turbanned man and woman; English, late 17th century.

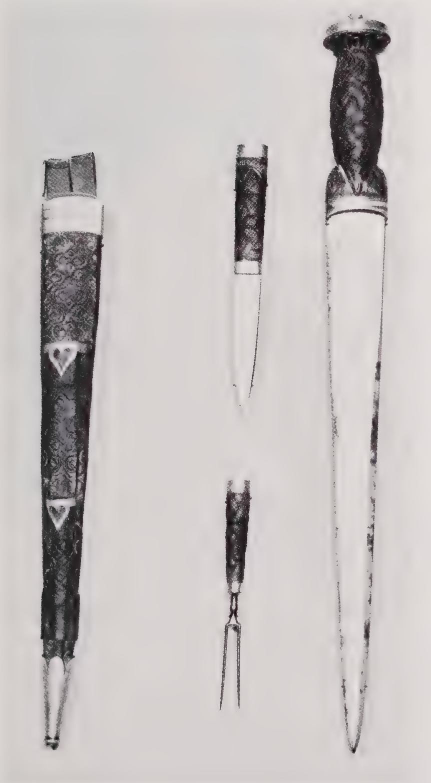
was by no means universal. In France Louis XIV preferred eating with his fingers and forbad his grandsons to use forks at his table, although they were accustomed to doing so. As late as the middle of the 18th century remote areas of Britain still ignored the fork. Dr. Samuel Johnson, writing in 1773 of his Scottish journey with Boswell, noted: "Thirty years ago the Highlander wore his knife as a companion to his dirk or dagger, and when the company sat down to meat, the men who had knives, cut the flesh into small pieces for the women, who with their fingers conveyed it to their mouths." Eventually the fork reached the Highlands, and late 18th-century Scottish dirks have compartments in the sheath for both knife and fork (Plate 12). So inseparably paired did the knife and fork become that phrases such as "a good knife and fork man", synonymous with "a hearty eater", abound in 19th-century British literature. Unhappily such colourful expressions are no longer current.

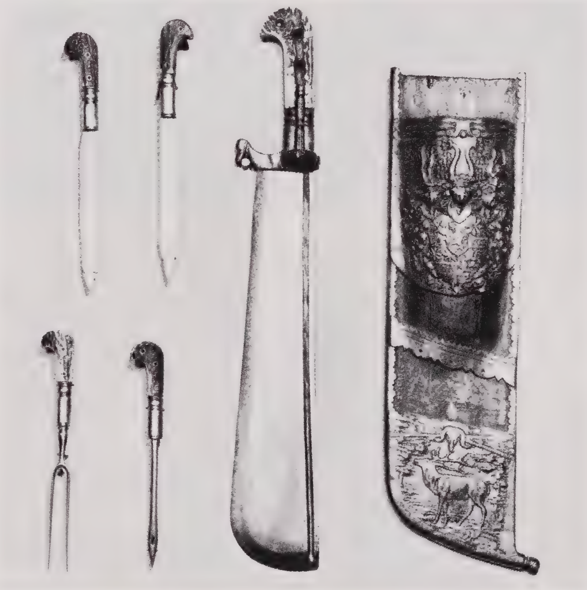
Another interesting equipage was the German hunter's *trousse de chasse* of knives, and later forks, used not for killing animals in the hunt but for jointing and preparing the carcasses. Plate 13 shows the typical broad-bladed cleaver. This particular example is accompanied by two small knives, a fork, and a larding needle, used to push strips of fat into the meat before cooking it.

Even as late as the 18th century prudent travellers carried their own cutlery, fitted into a small case or



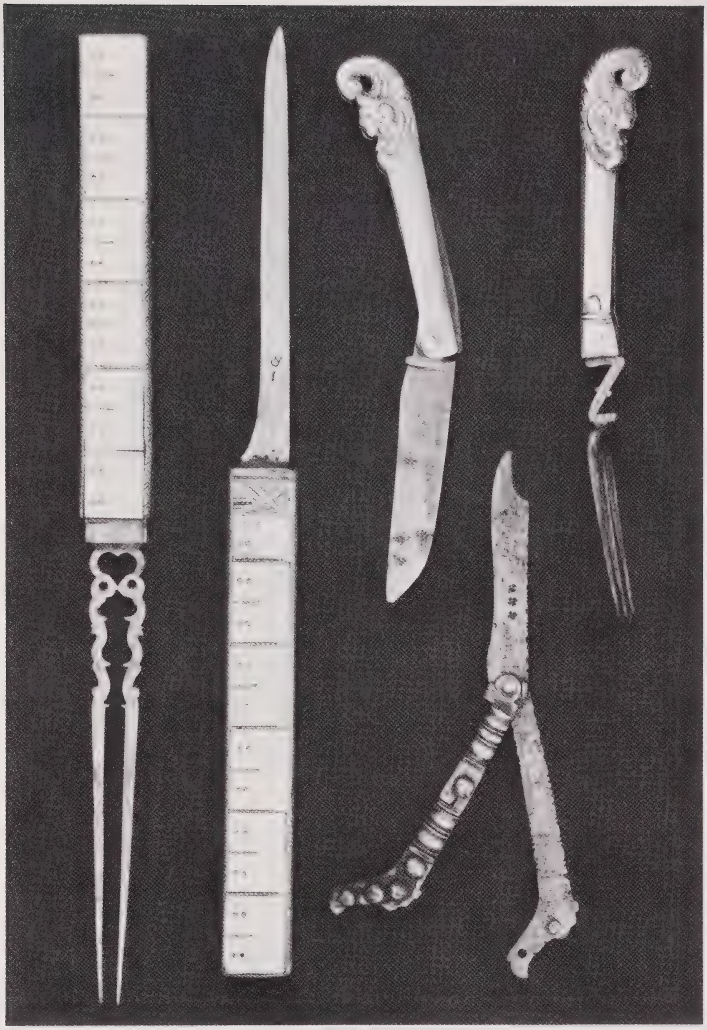
Left, Plate 14: Knife and fork with tapering cylindrical agate handles with silver ferrules. The conical sheath is silver mounted. Probably English, early 18th century. The blade and the prongs are later French replacements.



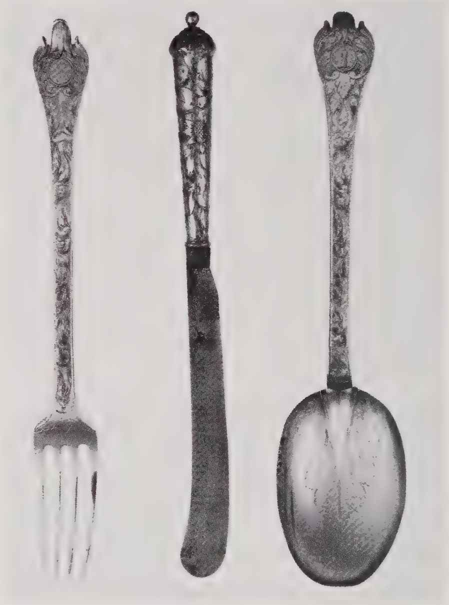


Above, Plate 13: The handles of the implements in this trousse de chasse are made of staghorn; the sheath has embossed iron mounts. German, late 17th century.

Left, Plate 12: Dirk, knife, and fork with wood handles carved with Celtic interlace, and stamped leather sheath with silver mounts. Scottish, late 18th century.



Left, Plate 15: *On the left a knife and fork with brass handles inlaid with mother-of-pearl and brass in half-inch and one-inch divisions (the two implements can be put together to form a ruler approximately 12 inches long); German, second half of 17th century. On the top right a folding knife and fork with silver handles terminating in a scroll above a face; French, late 17th century. On the bottom right a folding steel knife with handle faced with horn scales. The blade folds between two moving halves of the bifurcated handle. Dutch, early 17th century.*



made with folding handles, since inns were not always able to supply such conveniences (Plate 14). Some earlier folding knives and forks are illustrated in Plate 15.

By the late 17th century, silver (which permitted knives, forks, and spoons to be made *en suite)* was becoming favoured by those who could afford it. Working up the fork from a strip of silver meant that the fork handle now became flat and its shape echoed that of contemporary spoon handles (Plate 16). The trifid spoon and fork (so called because of the shape of the end) were made in England in the late 17th century, though comparable types were also made in Frànce. The steel-bladed knife with silver-gilt cannon handle (Plate 16) shows a related style of engraved fruit and foliage decoration popular at this time. Such knives were used with trifid forks and spoons. Blades of silver-handled knives continued to be made of steel, which had the best cutting edge. Both steel blades and prongs which have been damaged or worn with use have often been replaced if the handles were considered worthy of preservation.

While the straight blade remained in fashion on the Continent, in England in the late 17th century the knife blade began to develop the graceful curve and rounded tip, which culminated in the elegant scimitar shape of the 18th century (Plate 17). At the same time prongs became shorter and slightly curved, so that food could be carried to the mouth more easily. Until about 1760 the characteristic 18th-century handle was of pistol-grip form, both elegant and practical for grasping (Plate 17). Later, handles straightened out, and they have generally remained straight up to the present.

Less expensive alternatives to silver flatware were sets of knives and forks with handles of ivory, agate, horn, wood, and porcelain. The handles were far less exuberant than those of the 17th century (Plates 14 and 17 right). A cheaper alternative to the solid one-piece silver fork was the fork with a hollow silver handle and steel prongs. Until the middle of the 18th century these handles were cast in two parts (Plate 17 left), but after that they were stamped from thin sheet silver and filled with composition.

A novel material for handles in the form of porcelain appeared in the late 17th century. At first the handles were ordered from China, but as porcelain manufacture spread in Europe in the 18th century, handles were made in Germany, France, and England until late in the century (Plate 17 middle).

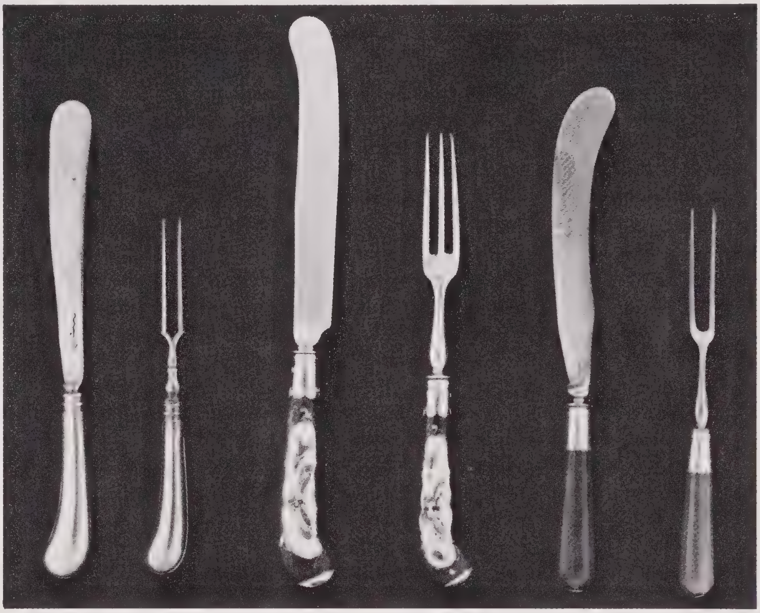
Nonetheless, the undeniable preference in the 18th century was for complete services of flatware in silver, and there evolved a number of specific patterns, which from the 1840s on became available in electroplate. No matter how handsome these sets are in appearance, their history is less interesting. The standardization into well-defined patterns and the industrial methods of manufacture cannot challenge the individuality and variety of earlier knives and forks.

References

Correspondence of the Princess Palatine, Charlotte Elizabeth of Bavaria, sister-in-law of Louis XIV, quoted in Norman, Barbara, *Tales of the Table*, p. 118. Englewood Cliffs, New Jersey, 1972.

Johnson, Samuel, *A Journey to the Western Islands of Scotland*, ed. Mary Lascelles, p. 57, Yale University Press, 1971.

Opposite page, right, Plate 16: The silver-gilt trifid fork and spoon have handles engraved with flowing scrolls. English, late 17th century, with maker's mark TT below three crescents. Gift of Mr. James Hopkirk. The steel-bladed knife has a silver-gilt handle engraved with scrolls, fruit, and flowers. English, late 17th century.



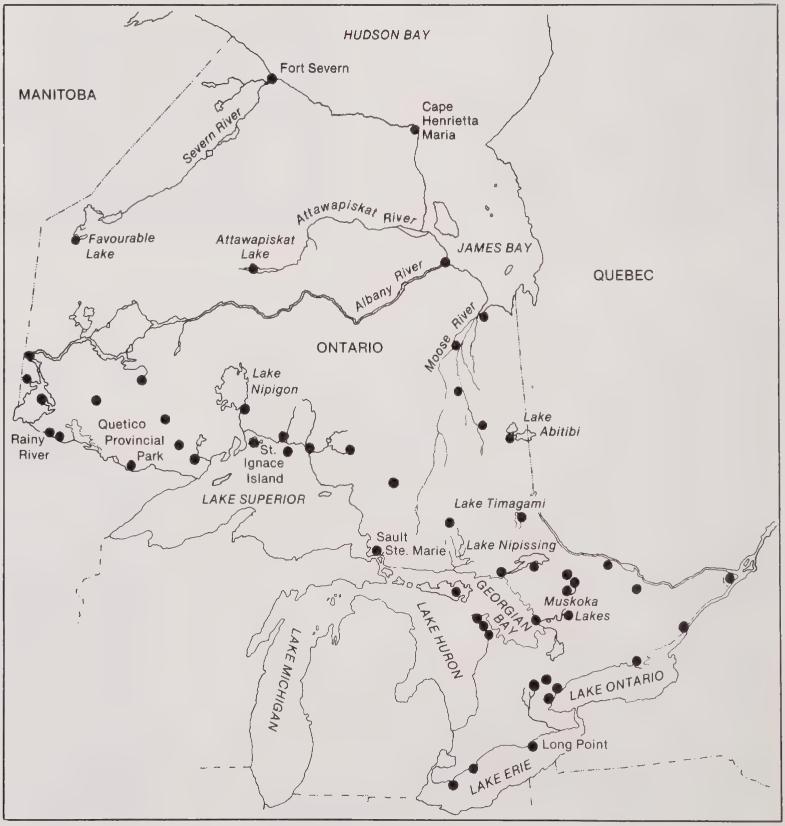
Right, Plate 17, from left to right: Knife and fork with silver-gilt, pistol-grip handles and steel blade and prongs. The blade shows the early scimitar shape; English, c. 1700. Knife and fork with soft-paste porcelain handles. The handles are Worcester, c. 1760–65; the blade and prongs are later replacements. Knife and fork with agate handles of simple 16-sided tapering form; the blade shows the fully developed scimitar shape. English, early 18th century.

Jean Bacso joined the ROM's European Department in 1965 after receiving her B.A. in fine arts from the University of Toronto and spending two years in India with CUSO. She deals mainly with English ceramics, glass, silver, furniture, and clocks and watches. She has published research on 19th-century Toronto potters and is an amateur potter herself.

Above: One of the first field trips of the Royal Ontario Museum of Zoology was to Port Sydney, Muskoka, in 1919. Left to right: E.M. Walker, L.L. Snyder, E.B.S. Logier, and N.K. Bigelow.

Right: Map with dots indicating the locations of ROM mammal surveys in Ontario from 1919 to 1978. Many of the earlier field expeditions were joint efforts with staff who collected other vertebrates as well as invertebrates.

Opposite page: Preparation of the skin of a small rodent in the field. Specimens obtained during the many ROM field trips in Ontario form the nucleus of the Department of Mammalogy's collection of Ontario mammals, which numbers about 20,000.


HUDSON BAY
Fort Severn
MANITOBA
Cape Henrietta Maria
Severn River
Attawapiskat River
Favourable Lake
Attawapiskat Lake
JAMES BAY
QUEBEC
Albany River
Moose River
ONTARIO
Lake Nipigon
Lake Abitibi
Quetico Provincial Park
Rainy River
St. Ignace Island
LAKE SUPERIOR
Lake Timagami
Sault Ste. Marie
Lake Nipissing
GEORGIAN BAY
Muskoka Lakes
LAKE HURON
LAKE MICHIGAN
LAKE ONTARIO
Long Point
LAKE ERIE

Ontario Expeditions Past and Present

The ROM's Provincial Mammal Surveys

David Nagorsen

MUCH OF THE CURATORIAL WORK in the ROM's Life Sciences departments is concerned with identifying and cataloguing specimens for collections and interpreting these collections through various research projects, but not all of a curator's time is spent in the back rooms of the Museum. An important part of his or her work, generally not well known to the public, involves field trips to acquire new materials. These expeditions are invaluable: they provide an opportunity to obtain biological specimens from areas that are poorly represented in collections and they often stimulate new research projects that continue for many years after the original field work.

Through the years the Department of Mammalogy has participated in field expeditions to many regions of the world. One of its most important undertakings, however, began soon after the establishment of the Royal Ontario Museum of Zoology in 1914, when a series of faunal surveys was initiated to determine the geographic distributions of

Below: Aircraft support was essential for reaching some of the remote collecting sites in northwestern Ontario. Here a ROM field crew is shown unloading an aircraft in the Patricia District about the late 1930s.

the province's fauna and to build up representative collections. It is difficult now to appreciate how little was known at that time about the mammals inhabiting Ontario. Only a few collections had been made in the province, and those were mainly from the settled areas in southern Ontario. Northern Ontario was still a vast wilderness, relatively unpopulated and generally inaccessible by road. Thus the few published accounts of Ontario mammals before 1920 were regional and there was no synopsis for the entire province.

There were no distinct departments in the Royal Ontario Museum of Zoology then; in fact, separate departments were not established until the mid-1930s. Although the first biologists of the ROM often had special expertise in certain disciplines, for example, entomology and ornithology, they generally maintained a broad interest in natural history. The collections prepared during these early field trips included mammals, birds, reptiles, amphibians, and various invertebrates.

The most extensive studies were of the Lake Nipigon region (1923–24), the Lake Abitibi region (1925), King Township, York County (1926), Long Point (1927–28), western Rainy River District (1929), Prince Edward County (1930), and the Sault Ste. Marie region (1931). These were published in the old series "Contributions of the ROM of Zoology", and the authors were the men who would play a dominant role in developing the zoological collections of the ROM: L.L. Snyder, T.M. Shortt, J.L. Baillie, J.R. Dymond, E.B.S. Logier, and T.B. Kurata. H.P. Stovell was responsible for the mammal collections obtained in the Long Point, Rainy River District, and Prince Edward County surveys, and he could perhaps be considered the first mammalogist at the ROM. In 1937 Mammalogy became a department separate from the other zoology divisions, and the mammal surveys were now independent, although many field trips were joint efforts with the Department of Ornithology. The three mammalogists on staff at that time—E.C. Cross, L. Prince, and S.C. Downing—spent several months of each summer on collecting trips to such regions as Algonquin Provincial Park, Cochrane District, and Patricia District.

These early field trips were under-financed and operated on a shoestring. Another difficulty was transportation, particularly in northern Ontario where few roads existed. Many field trips were therefore undertaken by railroad, with the result that a number of collecting sites in northern Ontario were near the main Canadian Pacific and Canadian National railway lines. Expeditions to the more remote parts of the province such as Fort Severn, Favourable Lake, and Attawapiskat Lake required aircraft support. The following account taken from Bulletin No. 9 of the Royal Ontario Museum of Zoology describes the logistics of the 1940 expedition to Fort Severn. The field party included L. Prince of the Department of Mammalogy, C.E. Hope of the Department of Ornithology, and a student assistant, W.B. Scott, who later became curator of the ROM's Department of Ichthyology and Herpetology.

> "In 1940 the same party (Prince, Hope, Scott) left Toronto on June 4, reaching Ilford, Manitoba, from where they were to fly to Fort Severn on June 8. Unfavourable weather delayed the flight until June 15. On noon of that day the party reached Fort Severn and were soon established in a building placed at their disposal by the Hudson's Bay Company. Thirty-seven days were spent collecting specimens and making observations on the fauna of the region. The party left Fort Severn on July 23 on the Hudson's Bay Company schooner, *Severn*, and two days later reached Churchill, Manitoba. Four days were spent at

ROYAL ONTARIO MUSEUM – ZOOLOGY
CARLING CONSERVATION CLUB

Left: R. L. Peterson, ROM Curator of Mammals, at St. Ignace Island, Lake Superior, in 1947. Several field trips during the 1940s were funded by Carling Breweries.

Opposite page, right: The camp at Off Lake in Rainy River District used by the 1929 ROM expedition. Seated with dog is J.L. Baillie; standing are H.P. Stovell (left) and L.L. Snyder. Identity of the boy is not known.

Churchill during which time a white whale which had been captured was measured, photographed, and the skeleton roughed out and two embryos preserved. Toronto was reached on August 3."

Despite financial and logistic problems, the results of these expeditions were impressive, and several new records were obtained. During the 1927–28 survey of Long Point, Museum staff collected seven specimens of the least shrew *(Cryptotis parva)*, the first records for this shrew in Canada. In subsequent collecting at other localities near Lake Erie no specimens of the least shrew were found and the distribution of this mammal in Canada appears to be confined to Long Point, Ontario. In the 1929 study in Rainy River District, a series of Franklin's ground squirrels *(Spermophilus franklinii)* was obtained near the town of Rainy River. There had been reports of this squirrel in western Ontario, and the ROM specimens were evidence that this prairie mammal had recently extended its range into Ontario because of clearing of forests for agriculture during the early 1900s.

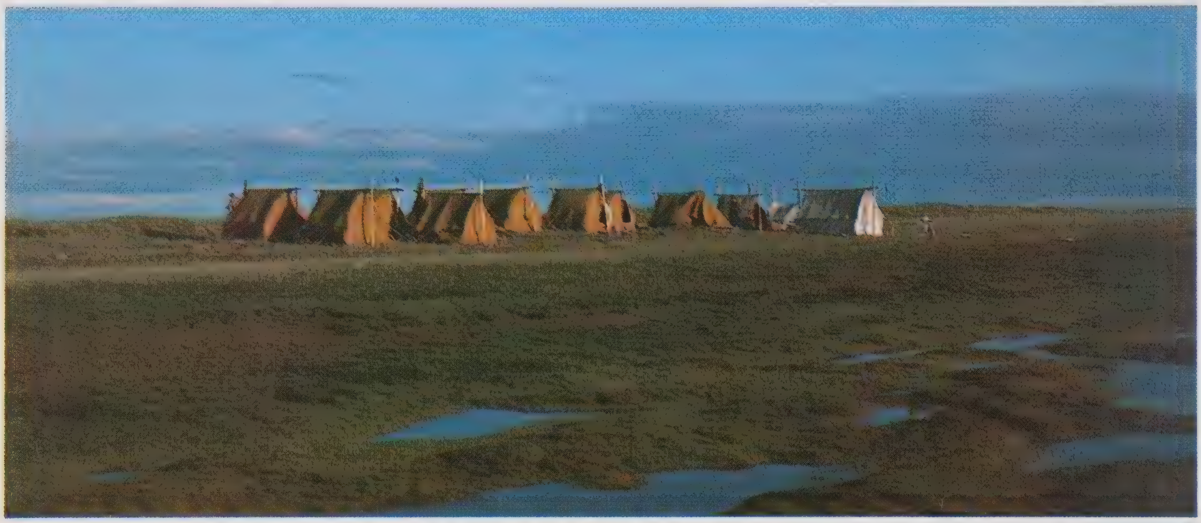
The Ontario surveys were not only important for new records. Because they represent a permanent record of the mammals that existed in the province 30 to 50 years ago, specimens prepared during these field trips are invaluable and virtually irreplaceable, and they now form the backbone of the Department of Mammalogy's Ontario collection. Our present holdings of about 80,000 specimens include approximately 20,000 specimens of Ontario mammals—the largest and undoubtedly the most important scientific collection of the province's mammal fauna. The ROM collection is also the only source for such important biological information on Ontario mammals as reproductive data, habitat data, and records of historical occurrence.

With the advent of World War II, the field work of the Department of Mammalogy was curtailed. In 1946 R.L. Peterson joined the ROM as acting curator and in 1950 he became the full-time curator. Peterson undertook an extensive study of the natural history of the moose in Ontario for his Ph.D. dissertation and made field trips to Algonquin Provincial Park, St. Ignace Island, and the Slate Islands in Lake Superior. Other field trips in the late 1940s and the 1950s took ROM mammalogists to Cape Henrietta Maria, Pelee Island, Manitoulin Island, and Lake of the Woods. The five-week expedition to Cape Henrietta Maria was the first extensive mammal survey of the arctic tundra zone in Ontario that extends along the Hudson Bay coast. A number of scientific and popular publications stemmed from these field studies. Unlike the descriptive faunal lists of the 1920s and 1930s, these publications were more interpretive in nature and dealt with the taxonomy and zoogeography of Ontario mammals. In 1966 the Ontario work culminated in the publication of *The Mammals of Eastern Canada* by R.L. Peterson. Much of the information on geographic distribution published in this book was derived from the ROM faunal surveys.

With this extensive history of collecting in Ontario, one might conclude that the Ontario field work is complete. However, there are several fundamental reasons for continuing the Ontario mammal study. Many areas in the province have never been surveyed and we know little of the mammals inhabiting them. This is particularly true of the immense boreal forest in northwestern Ontario. Tracts of several hundred square miles separate our collecting sites there, and the northern limits of the geographic ranges of many mammals in this part of the province are unknown. A number of species of mammals reach their northern limits of distribution in Ontario and we know little

Left: Loading equipment into a Ministry of Natural Resources' Otter aircraft for transport into the interior of Quetico Provincial Park, June 1978. Staff of the Department of Mammalogy are currently surveying the small mammals of this park.

Below: The 1948 ROM field camp at Cape Henrietta Maria on Hudson Bay. This expedition probably represented the first extensive mammal survey of the tundra zone in Ontario.

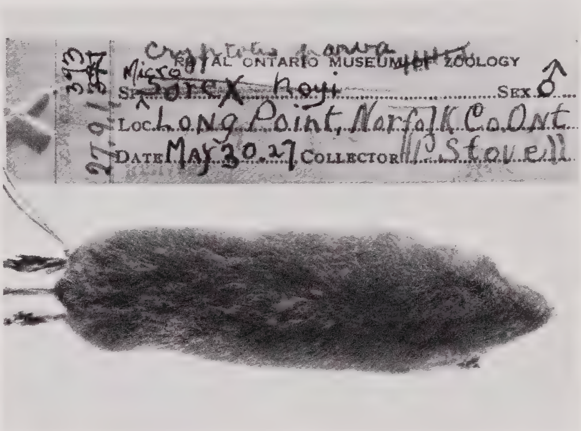


about the various factors that determine these. Moreover, areas surveyed by Museum field parties 40 to 50 years ago should be re-examined to discover whether there have been changes in their mammal fauna. Animal distributions are continuously fluctuating in response to the climatic and environmental changes, and changes in distribution and abundance through time would be expected. Because they respond to such factors, mammals, especially rodents and other small mammals, are important environmental indicators.

The proliferation of environmental impact studies in the past decade has also underlined the necessity for faunal surveys. Traditionally, systematic collections have been used by naturalists and zoologists studying natural history, taxonomy, and zoogeography. However, consulting firms, ecologists, and various governmental agencies have begun to recognize the potential wealth of data that may exist in museum collections. A common use of collections is in the production of faunal checklists for particular geographic areas. For example, the Department of Mammalogy received a request from the Ontario Ministry of Natural Resources in 1978 for assistance with a checklist of the mammals of the West Patricia Planning Area, a vast region in northwestern Ontario that extends roughly from Sioux Lookout to north of Big Trout Lake and encompasses about 100,000 square miles. In response to proposals from a pulp and paper company to cut some of the primitive forest in the area and from Polar Gas to build a pipeline, the Ontario Government initiated a preliminary study. Only two large collections of small mammals have been made in this enormous area—the result of ROM field trips to Favourable Lake in 1938 and Attawapiskat Lake in 1939. Our knowledge of small mammals in the West Patricia area is based almost entirely on these two collections. This not only illustrates the value of collections, even those made 40 years ago, but also points out the necessity for continuing field studies to improve our knowledge of the province's mammal fauna.

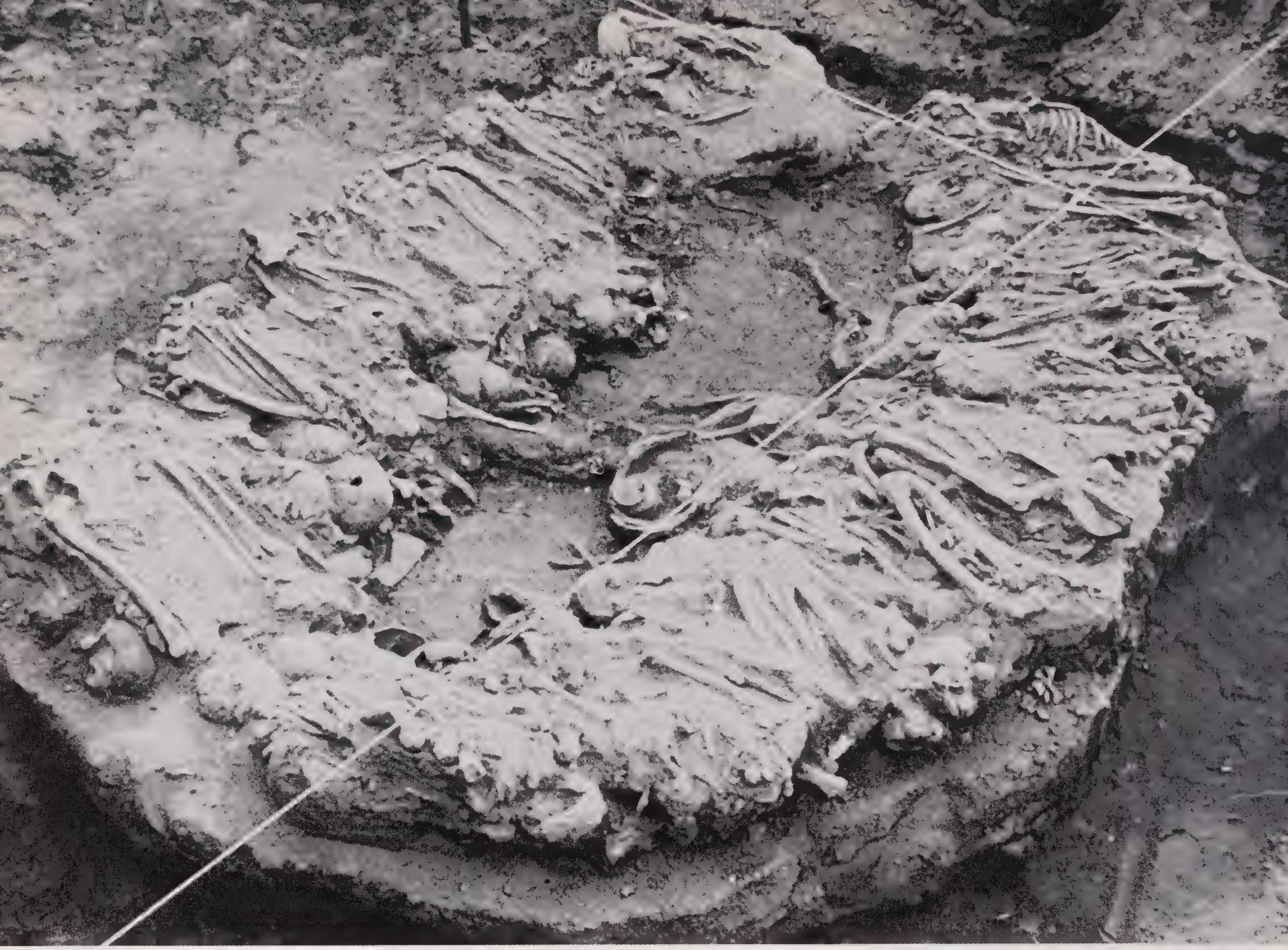
For these reasons, the Department of Mammalogy in 1976 initiated another long-term study of the Ontario mammals with a collecting trip to Fort Frances District. For the past two summers, we have been heavily involved in a small-mammal survey in Quetico Provincial Park, a three- to five-year cooperative project involving the ROM and the Ontario Ministry of Natural Resources. It now appears that there is the potential for the Department of Mammalogy to work closely with the Ontario Government in other parks, nature reserves, and ecologically unique areas in the province. As were the first ROM field trips, the present ones are limited by certain budget restraints and recent Ontario field expeditions have been made possible, to a large extent, by grants from the Canadian National Sportsmen's Show. Modern methods for trapping small mammals and other recently developed techniques such as the preparation of chromosome slides for karyotypic studies are being applied in these surveys. We are also recording considerable supporting documentation for our specimens, and these data (detailed habitat descriptions, reproductive data, latitude and longitude of collecting sites, stomach content analysis) are being entered into our computerized cataloguing system for easy retrieval.

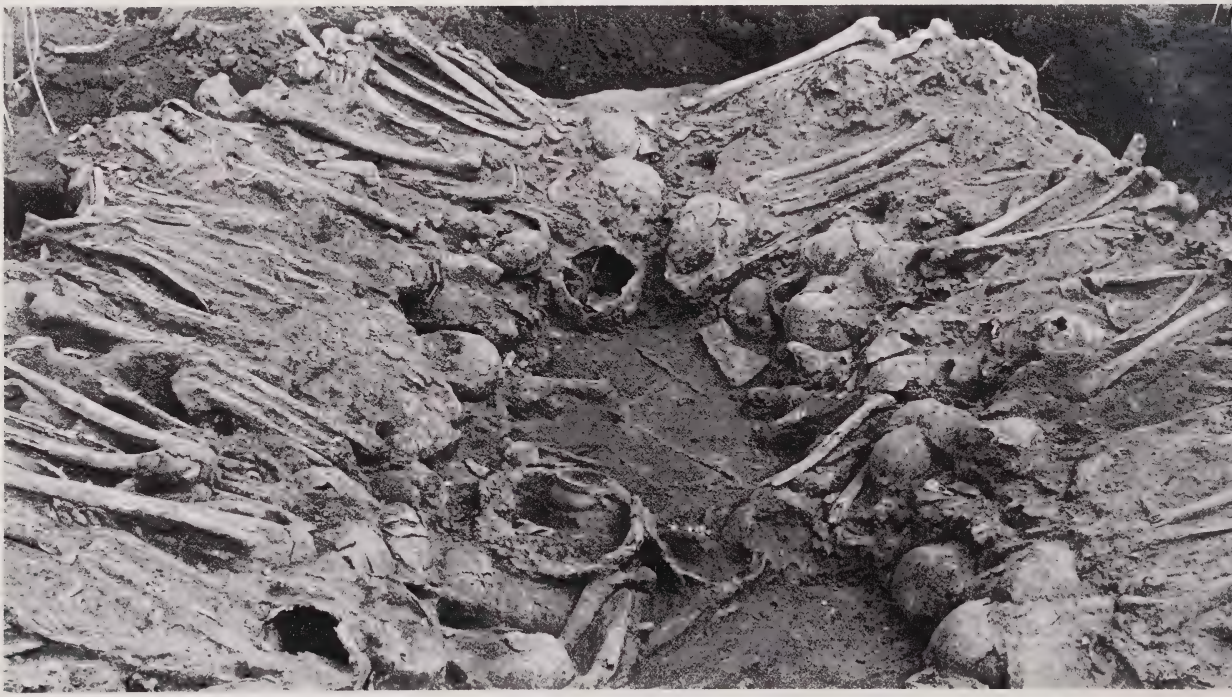
A study skin of a least shrew (Cryptotis parva), *originally identified as a pygmy shrew* (Microsorex hoyi), *collected at Long Point in 1927. This shrew is found in Canada only at this locality.*



My fascination with the early surveys of the ROM developed from my interest in the distribution of Ontario mammals and from my involvement in the recent field studies in Fort Frances District and Quetico Provincial Park. After experiencing some of the logistic problems involved in organizing major field trips, I can now appreciate the accomplishments of the earlier ones. Reviewing the history of the Royal Ontario Museum of Zoology has also made me aware that the ROM has accumulated its valuable collections of the Ontario fauna mainly through the efforts of a small number of enthusiastic staff participating in various field trips over the years. It has been said that field biologists tend to be rather "odd sorts". This may be true. Certainly the field biologist has to contend with such discomforts as unpredictable weather, black flies and mosquitoes, and an unexciting diet of dried and canned foods. Nevertheless, museum field work is rewarding, and as the winter months drag on, I often daydream of summer field trips to remote, unstudied areas in Ontario. Undoubtedly, the first biologists of the ROM had similar thoughts when they contemplated the first Ontario field trips 60 years ago.

David Nagorsen is a Curatorial Assistant in the Department of Mammalogy. He graduated from the University of Guelph with a degree in zoology and joined the staff of the Museum in 1972. His main interest is in the taxonomy and zoogeography of mammals and he has conducted field work in the West Indies, the northern Yukon, and various areas in Ontario.





Geometry of Death

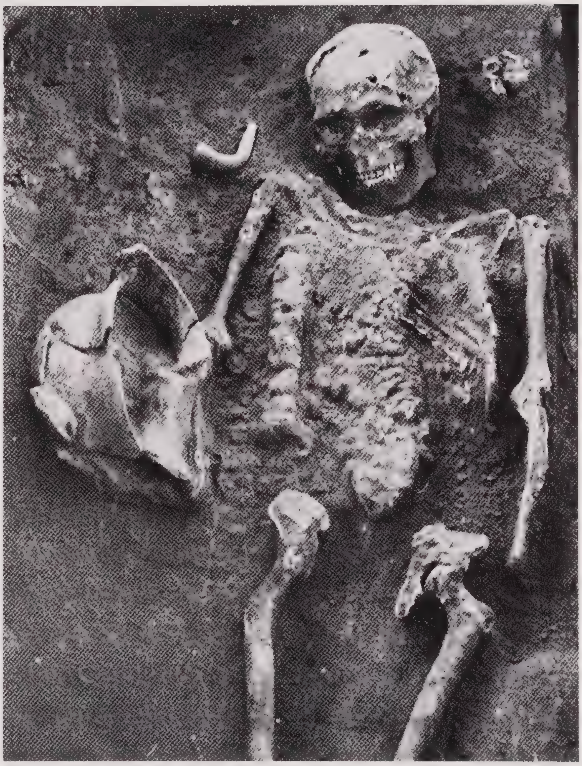
The Neutral Indian Cemetery at Grimsby

Walter A. Kenyon

Our work at the Grimsby site, an historic Neutral cemetery (see *Rotunda*, Vol. 10, No. 3), unearthed a burial pattern that has not previously been reported from this area. This is not surprising, however, as we have virtually no firsthand information on the burial practices of the Neutral. Almost all our archaeological knowledge of the subject has been derived from secondary sources. It was assembled by scholars, such as Frank Ridley, who carefully sifted through old newspaper files, the fading memories of elderly farmers, and the cemeteries that had already been dug over by generations of curio hunters. Most of the people who concerned themselves with this topic assumed that the Neutral practised an ossuary form of burial which was essentially similar to that of the Huron. The basis for the assumption was apparently the references that the early French missionaries made to the *Feast of the Dead* among the Neutral. It was supported by the fact that most of the people who dug into the Neutral cemeteries throughout the last century tended to call all multiple burials "ossuaries".

In a purely technical sense, of course, the Neutral did have ossuaries, for an ossuary is simply a pit, or other receptacle, in which bones are deposited. At a descriptive level, then, both the Neutral and the Huron did practise ossuary burial. But it is a naive observer who would see in a Huron ossuary nothing but a repository for human remains—a parking lot, as it were, for used bones. Surely a more sophisticated observer would see it as the stage on which one of the great human dramas was acted out. For it was the living —not the dead—who were the central figures in the burial ceremony; it was they—not the dead—who chose the date of the ceremony, who called the mourners together, and who shaped and performed the associated rituals.

In the Grimsby cemetery, we removed 374 skeletons, or parts of skeletons, from 58 different graves. Three of the graves were merely pockets of disturbed bone, however, and contributed nothing to our understanding of Neutral burial practices. This discussion, then, is confined to 55 graves containing 367 skeletons, or parts of skeletons. Twenty-seven of these graves contained a single burial; each of the remaining



Above: Grave 12, a single flexed burial with a crushed clay pot and a clay tobacco pipe.

Opposite page, top: Grave 62, a symbolic long house.

Opposite page, bottom: East end of Grave 62, with clay pot and iron axe in central corridor.

28 contained more than one burial, the actual numbers ranging from 2 to 104.

If we examine these skeletons one at a time, it is immediately apparent that there are four different kinds of burials present. The first is a primary or simple flesh burial, in which the body was placed in the grave within a reasonably short time after death. When such a burial is encountered during an excavation, the skeleton is complete (that is, all the parts are present) and the skeletal elements are fully articulated (that is, each part is in the right place). As a type, primary burials can be readily identified even when large portions of the skeleton have been destroyed through erosion or through some disturbance that occurred before the excavator arrived on the scene.

At the other extreme is the true bundle burial, the burial of a package containing the disarticulated skeletal elements of the deceased. The significant feature of this type of burial is the complete, or relatively complete, absence of flesh. A bundle burial is not the burial of a body that has been very tightly flexed—that is, which has the knees drawn up in foetal position and the arms folded—but the burial of a skeleton from which the flesh has been entirely removed through either natural or mechanical processes before the bones were wrapped up for the burial.

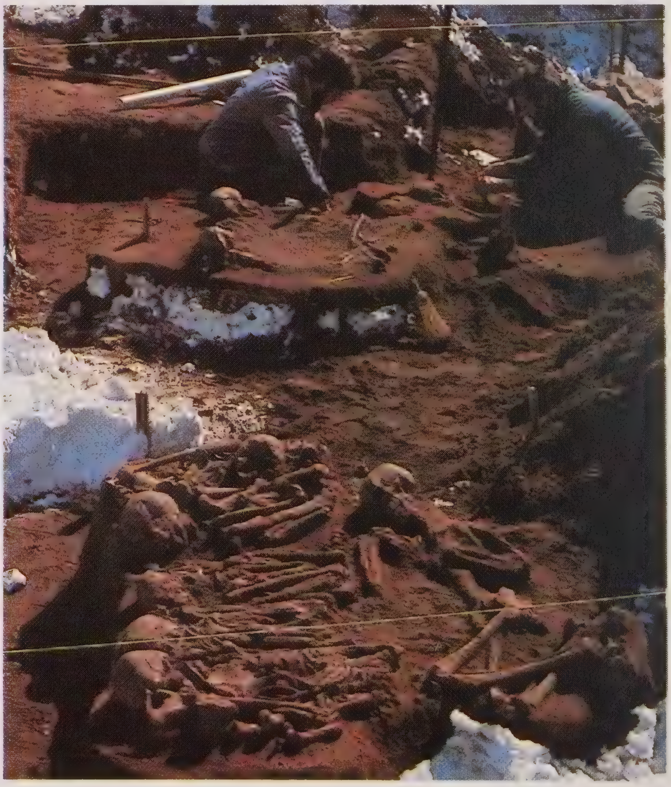
The third type of burial at Grimsby is what we might call the "scattered bundle". With this type, the bodies were not placed in the grave as discrete bundles, each in its own shroud, but were dumped into the grave without the wrappings that would have tended to preserve individual identities.

The fourth and final type of burial encountered in the Grimsby cemetery is the semi-articulated bundle. This rather awkward descriptive name is largely self-explanatory and is applied to bodies that were partly—but not completely—disintegrated before burial. It indicates too that each body was tightly wrapped in its own shroud. To distinguish between a tightly flexed primary burial and a semi-articulated bundle burial was sometimes difficult because the semi-articulated bodies formed a continuum, that is, some of them were almost intact, while others were almost wholly decayed. The degree to which a body had decomposed would depend mainly, of course, on the length of time intervening between the death and the burial of the individual concerned.

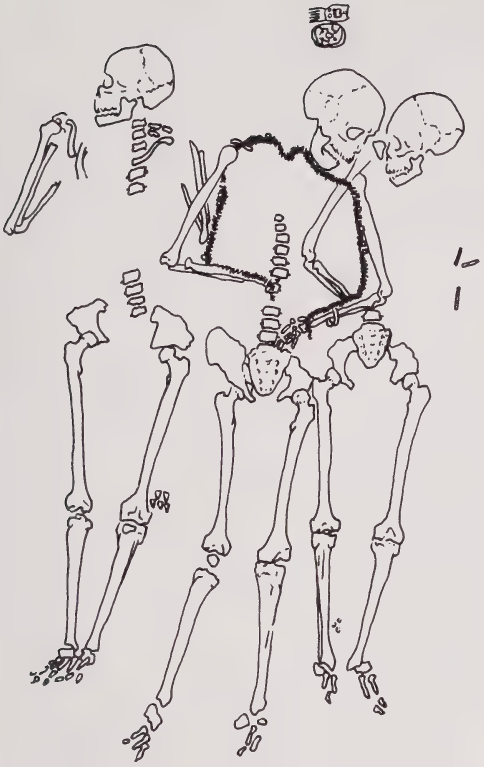
Although a precise count is not possible under the circumstances, approximately 50 articulated burials were found in the Grimsby cemetery. Of the 367 skeletons that were removed from 55 graves, then, 50 (13.6 per cent) were articulated, while the remaining 317 (86.4 per cent) had been partially or completely disarticulated before burial.

Some of the bodies that were fully articulated must therefore represent summer deaths; they are the bodies of people who died in summer and were buried

Above: Grimsby station.



Right: Grave 17, a single flexed burial with a group of semi-articulated burials.



Left: *Grave 19, a male bracketed by two females.*

Below: *Grave 9, a mass of disarticulated and semi-articulated burials.*

almost immediately. The majority, however, are those of people who died in winter and were not buried till the following spring. This is not to suggest that an individual would necessarily have been buried at once if he died at a time when the ground in the cemetery was not frozen. Nor is it to suggest that the bodies of all those who died in winter when the ground *was* frozen would have been buried in the early spring, as soon as the ground thawed out. The data merely suggest that the times of burial were broadly adapted to the annual cycle of freezing and thawing. Within these rather generous limits, the actual time of burial for an individual body or a cluster of bodies was probably determined by cultural factors which have not yet been identified.

As we noted earlier, 27 of the 55 graves in the Grimsby cemetery contained a single primary burial. Of the remaining 28 graves, 5 contained 2 skeletons each, 5 contained 3 skeletons each, 4 contained 4 skeletons each, 2 contained 5 skeletons each, and 2 contained 6 skeletons each. Examination of the age and sex distribution of the individuals in the multiple graves suggests that we are probably dealing with family graves. The data, of course, are much too limited to support any definitive statement, but they do suggest the burial plots of families who were practising polygamy.

Each of the remaining 10—which I have called mass graves—contained from 9 to 104 bodies. If all these bodies had been buried in a common grave, there would have been fewer difficulties for the archaeologist because the demographic profile would have been quite acceptable. The ratio of males to females to children falls within a normal range; in fact, it is very close to the demographic profile for the entire site. The populations of the individual graves within the group of mass graves, on the other hand, cannot be attributed to normal patterns of death. Some of the larger graves probably represent a sharply elevated death rate brought about by disease, since we know from the *Jesuit Relations* that epidemics of European origin were decimating the Neutral villages at that time. This could account for the abnormally large number of bodies in some of these graves, but it cannot explain the age and sex distribution we found in any of the mass graves. This anomalous age and sex distribution must have resulted from the action of some cultural factors which again have not yet been identified.

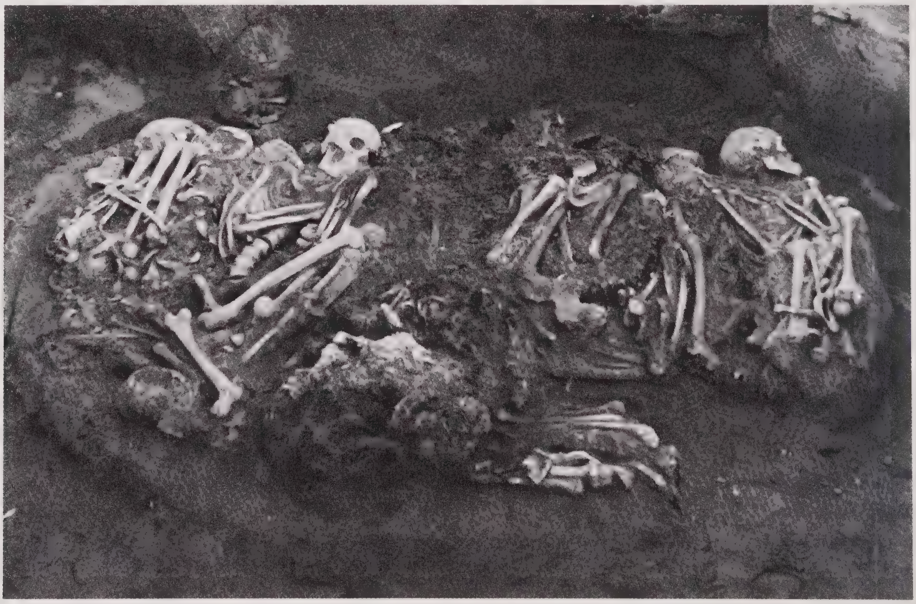
The mass burials are also set apart from the others by the distribution of grave furniture—iron axes, copper kettles, beads, necklaces, and bracelets. In the individual and family graves, the grave offerings were largely of an individual nature, and had been placed in the grave for the use of individuals whom we could usually identify. With the single graves, of course, there was no problem; even with the family graves there was really no problem, for bracelets, necklaces, and similar items were almost always associated with a particular individual. And an offering of food in a clay pot or copper kettle would have provided a meal for the whole family, just as it had provided meals for the same group of people while they were still alive. It would probably have been placed in the grave by the family and friends of the deceased individuals. With the mass burials, however, there were rich clusters of grave furniture which could not be associated with any particular individual. In all probability these clusters of grave furniture were placed in the grave by representatives of the entire village or community during ceremonies that served to promote psycho-social integration at a community level. It was almost certainly this ceremony, incidentally, that Father Lalemant had in mind when he referred to the *Feast of the Dead* among the Neutral. It would appear, then, that the *Feast of the Dead* must have been an annual event at Old Grimsby, as this is the only theory that is compatible with the archaeological evidence.

In summary, there were three different kinds of graves in the Grimsby cemetery—individual graves, family graves, and mass graves. And all ages and both sexes were distributed more or less randomly throughout the different kinds of graves. Examining the kinds of burials present, we find flesh burials, semi-articulated burials, bundle burials, and scattered bundle burials. Of the 374 skeletons in the Grimsby cemetery about 50 were flesh burials; all the remaining 324 bodies had suffered some degree of disintegration before burial.

We conclude from these data—and from the distribution of grave furniture—that summer deaths were dealt with by the family and friends of the deceased. The body was buried either alone or with other members of the family, or possibly with friends if two or more deaths happened to occur at approximately the same time. The associated rituals would have served to mend the fabric of primary interrelationships which had been torn asunder by death. Winter deaths, on the other hand, were dealt with by village or clan authorities. At the appointed time the individual families brought the bodies of their deceased relatives to the cemetery, where they were deposited in communal graves. The associated rituals on this occasion would serve to promote social integration at a community level. And the offerings of grave furniture that were symbolic of this community involvement consisted of those rich clusters we found only in the mass graves.

Examination of some of the burial practices of the neighbouring Iroquois—starting with the Huron to the north—is useful. When a Huron died, his body was immediately flexed, tightly wrapped in his finest beaverskin robe, and placed on a mat. Three days later the body was covered with an additional robe and carried to the cemetery. When the burial party arrived there, they placed the body in a bark coffin or tomb which was raised some 8 or 10 feet above the ground and supported by four wooden posts. This was not the final resting place, however, for at a later date the body would be removed from its tomb and reburied in a common grave or ossuary during the *Feast of the Dead*.

Every ten years or so the Huron would move their major villages to new locations as the houses and palisades fell into disrepair, the corn fields lost their fertility, and the supply of dry firewood within a reasonable distance became exhausted. When the old village was about to be abandoned, the tribal or village elders would set a date for the ten-day ceremony that culminated in the final burial of those who had died since the last such ceremony. Satellite villages were invited to bring their dead—or "souls",



Grave 11, a line of semi-articulated burials.

as they were called—to the communal burial place, and even neighbouring tribes who were outside the Huron confederacy were invited to attend.

In preparation for the reburial, bodies that had not yet disintegrated were wrapped in new robes and placed on litters. The rest of the bodies were stripped of any remaining flesh by their female relatives. The bones were then washed and wrapped in fine new beaverskins. During the process, friends and relatives would occasionally add personal ornaments such as beads and necklaces to the bundle. At the appointed time, the more or less intact bodies were carried to the grave site on their litters, while the bundles of bones were carried there on the backs of their female relatives. The grave itself was a large pit, carefully lined with beaverskin robes on which was placed a deposit of grave furniture. When all was in order, the more or less intact bodies were placed on the floor of the grave, still shrouded in their beaverskin robes and mats. Each of the bodies was then covered with one or two additional robes. Finally, the different packages of bones were emptied into the pit, where five or six men, armed with wooden poles, carefully mixed the bones together. This final mixing of the bones was a particularly significant part of the ritual, for the Huron believed that just as the bones of their friends and relatives were mingled together in death, so must the living be mingled together in harmony and trust.

The distribution of bones found in a Huron ossuary, then, should be quite different—and indeed is quite different—from that found at Grimsby. The configurations that appear in Huronia and at Grimsby are different because they result from different social processes. When one of their members died, the Huron had what was essentially a family funeral. Then every ten years or so they gathered up the individual family members who had died and reburied them in a communal grave with rituals designed to promote community rather than family integration. The individual, in death, was submerged once more in the social system—or the culture, if you will—which had brought him forth, which had made him a Huron.

The eastern neighbours of the Neutral were the Wenro, the Erie, and the powerful Iroquois Confederacy. Both the Wenro and the Erie are rather shadowy groups. The Wenro were supposed to have been quite similar to the Neutral, but we really know very little about them, and virtually nothing about their burial practices. They were a small group, apparently, and were dispersed in 1638.

The burial practices of the Erie, on the other hand, are known through a very fine and detailed site report which Arthur C. Parker published in 1907. Parker excavated 123 skeletons from 107 graves. Ninety-five of these were in individual graves; the remaining 28 were in 12 multiple graves, each containing from 2 to 4 individuals, for the most part 2. Almost all of them were flexed and lying on their sides. Many of the skeletons were too seriously eroded to yield reliable data, but 86 of them were sufficiently complete that the orientation of the skeleton could be accurately recorded. Of the 86 skeletons, 60 were oriented towards one of the cardinal points, while the remaining 26 were oriented towards an intercardinal point.

East of the Wenro were the Seneca, the westernmost of the five Iroquois tribes that made up the Confederacy. They were the most numerous of the Iroquois tribes, as well as the most powerful, and it was they who were ultimately responsible for the destruction of the Ontario Iroquois. The burial practices of the historic Seneca have been reported in great detail by Charles Wray and Harry Schoff. They were usually buried in individual graves and in the flexed position. During the earliest period reported on—from 1550 to 1575—the orientation of the bodies was random, that is, they were not headed in any particular direction. With the passage of time, however, there developed a tendency for the Seneca to bury their dead with the heads pointing towards the west. By 1650, almost 95 per cent of the Seneca were buried in that fashion.

There is, therefore, a "patterning in death", to employ Gruber's perceptive phrase, that is characteristic of both the Erie and the Seneca. Both preserved and emphasized individual identity in death by leaving the bodies in individual graves, each with its small cluster of furnishings which was presumably placed there by the immediate relatives and friends of the deceased. Broader social concerns were not absent, however, for the dead were placed in separate cemeteries, at least among the Seneca, and it has been suggested that this segregation was based on moiety or clan membership. There was a tendency, then, for both the Erie and the Seneca to orient their dead towards one of the cardinal points. Why the Erie did so we do not know, but the custom among the Seneca was probably related to their position within the league. The Five Nation Iroquois referred to themselves as the *People of the Long House.* Their confederacy, they felt, was tied together with bonds that were as powerful and as binding as the bonds of consanguinity. And within their symbolic dwelling, the Mohawk were the *Keepers of the Eastern Gate,* while the Seneca were the *Keepers of the Western Gate.* The burial practices of the Seneca, then, reflect their concern with things of the west, with their position within the league. As the Iroquois responded more and more sharply to the demands of the fur trade, the position of the Seneca was defined with increasing clarity. And this sharper definition was reflected in turn within the cemeteries of the Seneca, in an increasing tendency for the bodies to be placed in the graves with their heads pointing towards the west.

The social processes that led to the configuration we found in Grimsby, on the other hand, were never recorded. Nor do we have detailed descriptions of other Neutral cemeteries to use for comparison. But there are a number of sociological (or cultural) processes implicit in the Grimsby configuration. While we were excavating, we became vaguely aware of the fact that the orientation of the skeletons in the several graves was not random. When we analysed the data on orientation back at the Museum, we found that the impression we had gained in the field was correct. Of the 27 individual graves, 7 contained the remains of infants or children which were so poorly preserved that they were unable to provide us with any data whatever on orientation. Each of the remaining 20 graves, however, contained a fully articulated skeleton. Of these, 15 (or 75 per cent) were heading towards one of the cardinal points of the compass, while 5 (25 per cent) were heading towards an intercardinal point.

The Neutral tendency to align the bodies of their dead with one of the cardinal points was not restricted to those who were buried in single graves. The same tendency is reflected in the multiple graves. Here too we find that it is not only flesh burials that indicate an interest in the cardinal points of the compass. There is a tendency to orient semi-articulated burials and even bundle burials in the same manner.

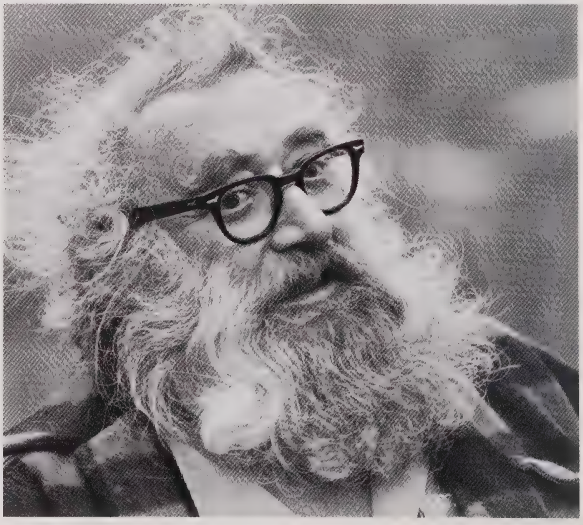
The interest in the cardinal points probably reflects the fact that the Neutral were concerned with maintaining cordial relationships with the Huron to the north and the Seneca to the east, that is, with the other Iroquois. Within the web of relationships that tied the Iroquois-speaking peoples together, the Neutral occupied the southwest corner. It is probably significant, then, that such a high proportion of the burials in the cemetery were lined up along these axes. It is significant, too, that the Neutrals (so far as we can tell with the inadequate sample at hand) did not favour one of the cardinal points at the expense of the others, as the Seneca did. The position of the Neutral within the web of Iroquois relationships was not as clearly defined as that of the Seneca, and could not be so precisely stated, therefore, in their mortuary symbolism.

The organization of the dead within the Neutral cemetery is a reflection, then, of the social organization of the living. Some of the most fundamental values, attitudes, and concerns of Neutral society are expressed symbolically in their mortuary practices. Grave 62, for example, is an Iroquois long house, an elongated oval with a central corridor and a sleeping platform along each side. The people of Grimsby were making some very clear statements when they buried their dead with such geometric precision. In its simplest form, the message reads: "We too are Iroquois. We too are *People of the Long House.*"

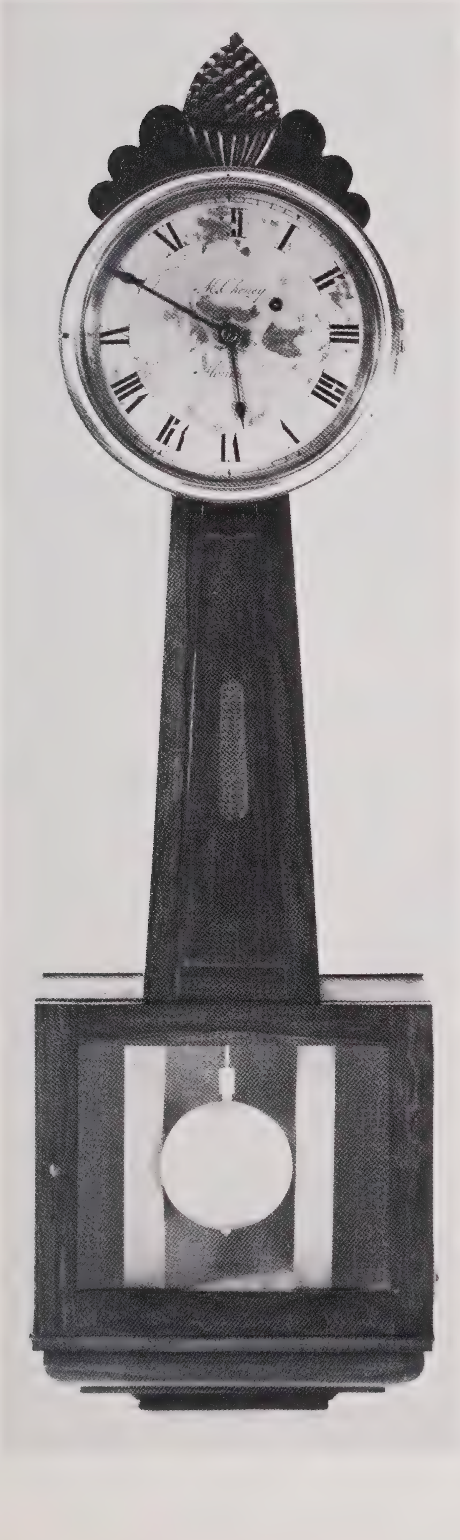
The long house of the Iroquois reflects a more fundamental characteristic of Iroquois society, the tendency towards bifurcation, for the long house—either real or symbolic—is bilaterally symmetrical. One side is a mirror image of the other. The same characteristic is found in some of the antler combs, in oval ceramic pots, and in the four double-mouthed clay vessels that were excavated at the Grimsby site. Visually, this bilateral symmetry creates the same dynamic tension that is generated through social groupings such as moieties or clan segments. And it is probably no accident, therefore, that the Grimsby cemetery itself is a long oval structure with its major axis lying east and west, for it, too, is a long house.

At the simplest level of analysis, then, we can see the distributional patterns that emerged from the Grimsby cemetery as logos, as symbols of identity. They simply identify those who are buried there as *People of the Long House.* Moving to a higher level of abstraction, this "patterning in death" is a reflection—a mirror image—of the social relationships that prevailed among the living, a ritual expression of those values and attitudes that gave to the culture of the Neutral its basic configuration. And ultimately it is the final act in the most mysterious of all the rites of passage—a symbolic bridge, arching across the dark and terrifying abysses of eternity.

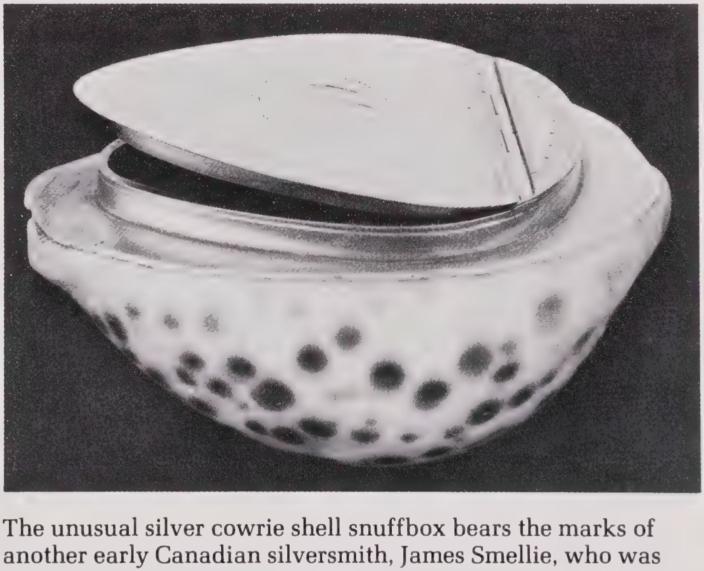
Walter A. Kenyon, with the Royal Ontario Museum since 1956, is a Curator in the Department of New World Archaeology. Most of his work has been devoted to the prehistory and early history of Ontario, and the underwater archaeology of the old canoe route of the fur traders. He is the author of three books on northern exploration: The Battle for James Bay *(with J.R. Turnbull),* The Strange and Dangerous Voyage of Capt. Thomas James *and* Tokens of Possession: The Northern Voyages of Martin Frobisher.



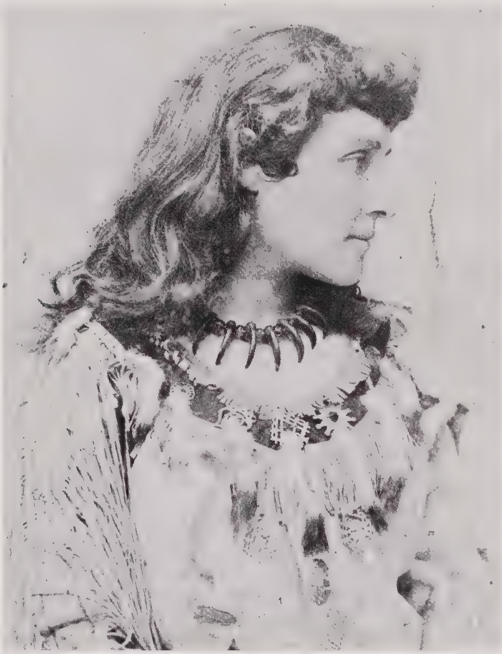
The Growing Collections

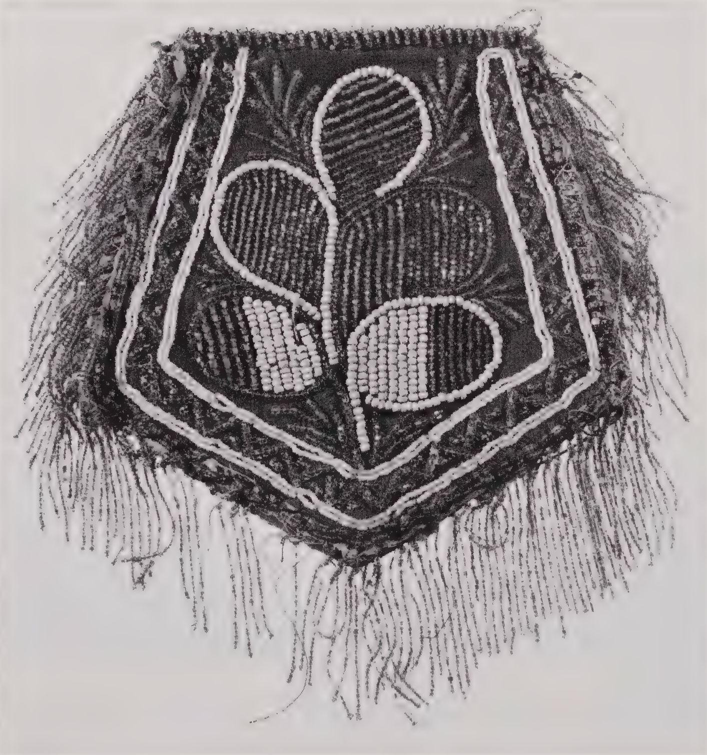


The Canadiana Department has recently acquired this unique Canadian banjo clock by Martin Cheney of Montreal, c. 1815–20. The case is wholly of rosewood, without veneering, with secondary pine in the back and inner frame. The tapered elongated inlay in the removable centre panel is satinwood. The original pendulum-case glass was probably reverse painted and the mahogany acorn pediment and finial may be a somewhat later addition. Martin Cheney, who moved from Vermont to Montreal in 1807, was active as a clock-maker and silversmith until his death in the late 1820s. Cheney stamped the brass works of this clock in two places with his silver punch. The same marks are on a large and handsome silver ladle, also a new Cheney piece in Canadiana's collections. D.B.W.



The unusual silver cowrie shell snuffbox bears the marks of another early Canadian silversmith, James Smellie, who was working in Quebec City in the 1820s.





The Department of Ethnology is indebted to Mr. Harold Ballantyne for his recent contributions to the Ethnology collections. In the late 1960s Mr. Ballantyne acquired a considerable amount of Native material from Martin's Mohawk Museum, located in the Brantford area and then owned by the late Mr. A. Martin. Curious about the identity of six photographic portraits and the origin of a beaded purse, Mr. Ballantyne, equipped with a tape recorder, consulted Mr. Martin and a neighbour. Mr. Martin identified the photographs as being portraits of Miss Emily Pauline Johnson, and most importantly, the purse as having once belonged to this famous Native poetess. These items, which have been graciously donated to the Royal Ontario Museum, will greatly enhance the collection of Miss Johnson's personal articles, some of which are at present on display.

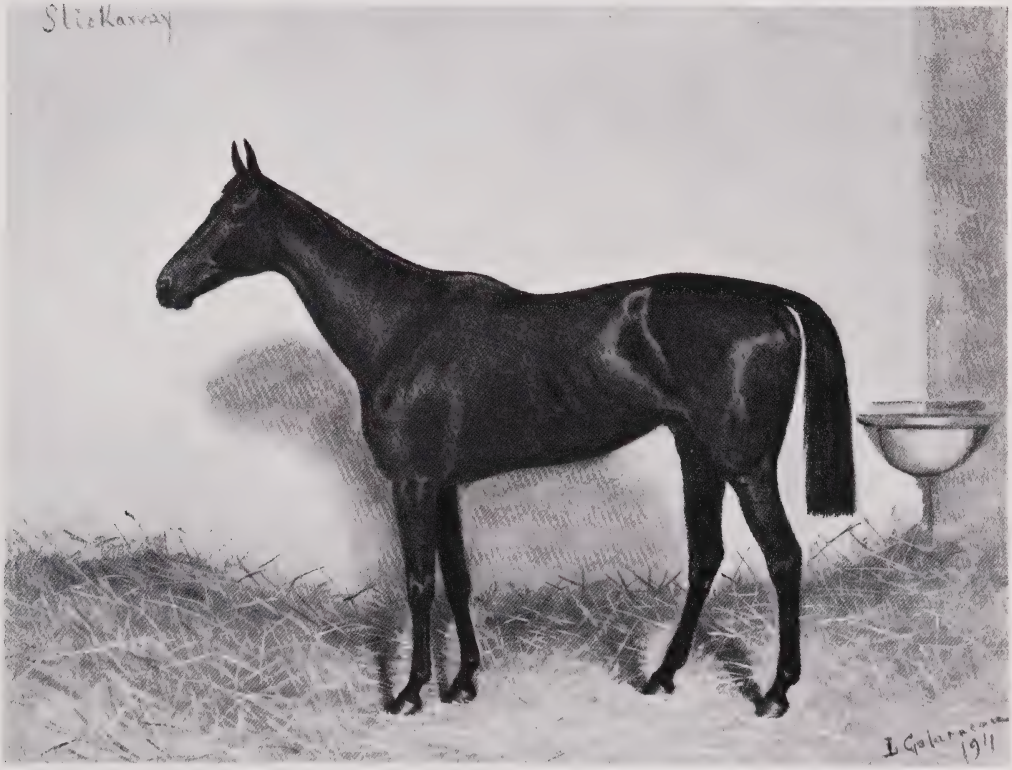
The fourth child of George Henry Martin Johnson, a Mohawk Chief, and Emily Howells, an Englishwoman, Pauline Johnson grew up during the late 19th century in the comfort of a cultured home. Her mixed parentage gave her an insight into two worlds. She came to know not only the intensely rich heritage of the Native people but through her father's high political position the elegance of the Canadian élite. This social environment, combined with her talent for writing, made Pauline Johnson the great person she was.

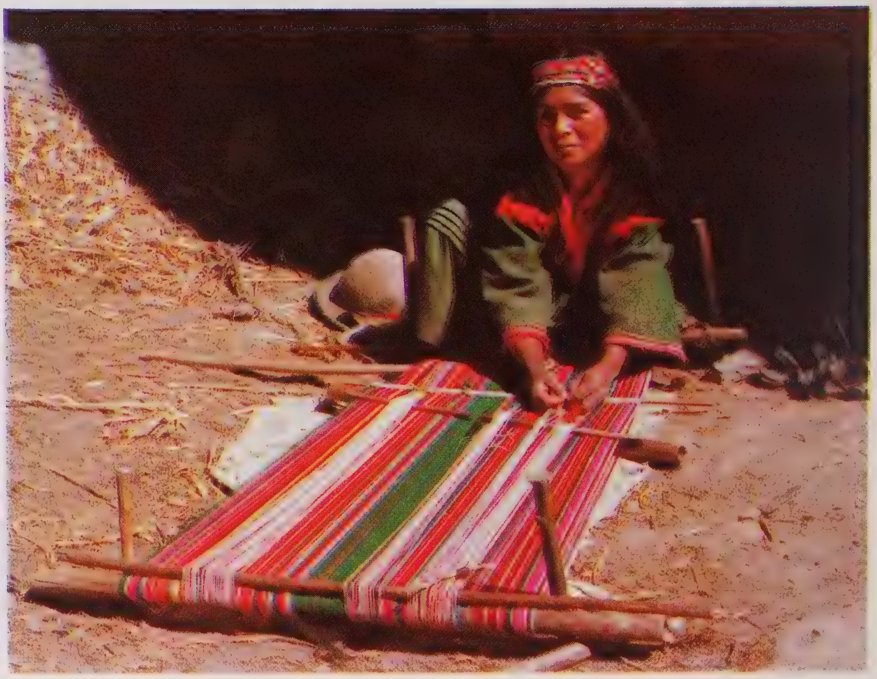
Pauline Johnson's poetry and prose express love for her Native heritage and land. Her writing reveals a desire for a strong country with an equal acceptance of the indigenous cultures. Through her writing, Miss Johnson presented her people to the literary audience.

Pauline Johnson fulfilled two interlacing roles: she was a writer aware of her public, and she was a Mohawk devoted to her people. The photographs reinforce this two-sided identity as they picture both a gentlewoman in 19th-century attire and an Indian woman in traditional Mohawk dress. In light of this dualism, it is particularly fitting that the purse belonging to this highly esteemed woman is filled with maple leaves.

K.R.L.

A recent addition to the Canadiana Department's collections is a painting (1894, oil on canvas, 26.0 cm x 30.4 cm) by Léopold Galarneau of *Slickaway*, the winner of the Montreal Hunters' Handicap Steeplechase of 1894 when he was ridden by Colin Campbell, Esq. The painting was given by a friend in memory of Marc Allodi.





Right: Bolivian highland girl weaving with a ground-staked backstrap or body-tension loom. Charazani region, 1970s.

Opposite page: Ancient Peruvian "tomb loom" unfinished four-selvage piece. Chimu Empire style, attributed to the central coast, possibly Chancay Valley. Late Intermediate period c. A.D. 900–1476.

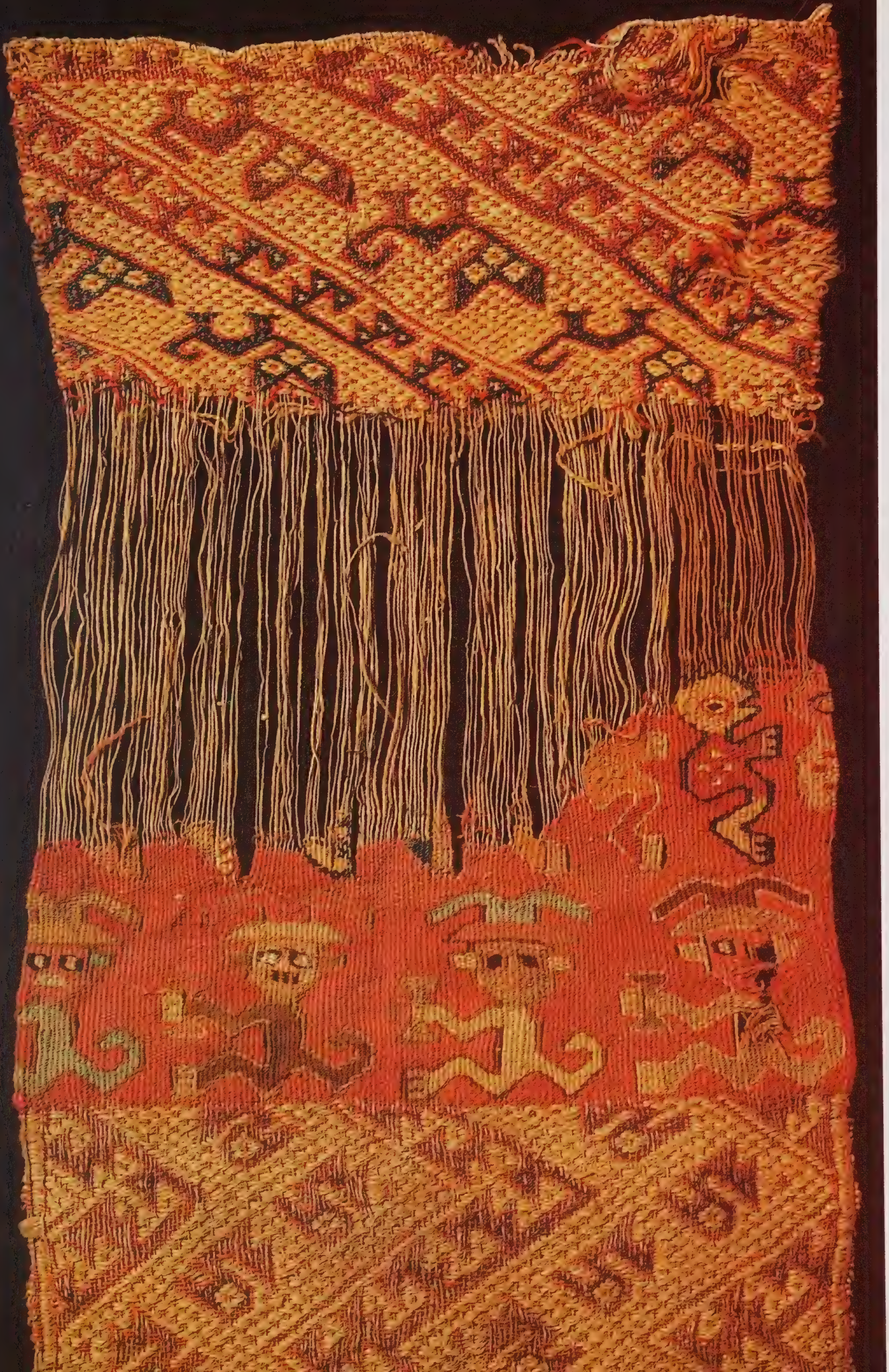
The Fabric of Ancient Peru and Its Legacy

Threads of History

Elizabeth A. Lewis

IN THE COASTAL DESERTS OF MODERN PERU lie traces of once proud and powerful societies. Along the valleys of the rivers that drop from the high Andes to the Pacific Ocean are to be found some of the largest Precolumbian ruins in the New World, preserved by the hot, dry desert sands. These river systems cutting across the desert bring life to one of the most arid regions on earth, in which oasis societies once flourished. By means of diking and terracing, the seasonal flow was controlled, enabling the people to cultivate extensive areas, often in excess of those in present use. Sophisticated societies based on complex land tenure and centralized authority supported a military-religious hierarchy of considerable importance and control. Indeed, the geographic extent of some of these ancient empires spanned numerous coastal estuaries, and through far-flung trade networks reached deep into the mountain valleys of the high Andes.

Throughout these extensive areas beautiful fabrics were produced and collected to clothe priests, warriors, kings, and notables—in life and in death. These fine textiles became valuable items of exchange and tribute, hoarded in central treasure houses with precious gold and jewels. One such temple centre dating from the great Moche civilization c. 200 B.C. is the north coast site of Pacatnamú where pilgrims came to consult the oracle. The first Spanish expedition to reach the site in 1533 recorded the practice still in effect and one Miguel Astete reported: "They come to this Devil, from distances of three hundred leagues [900 miles] with



gold and silver and cloth. . . from the town of Caramez [Atacames, on the coast of Ecuador], which is at the commencement of this government, all the people of this coast serve this mosque with gold and silver and offer tribute every year."

Thus it was that the production of fine textiles of great beauty became an important and organized affair. Official groups of spinners, dyers, and weavers produced clothing for an élite—clothing embellished with symbols of worldly rank and spiritual meaning. Cloth for everyday use was produced in every household, but the garments and wrappings of great beauty and skill were reserved for special purposes, one of the most important of which was the wrapping of the dead for the afterlife.

It is these highly perishable grave goods of the prestigious that have survived—because of the dry desert sands of the coastal region—to bear witness to the skill of the craftsmen of ancient Peru, a skill that is still alive today in the remote mountain areas of modern Peru and Bolivia. The ROM's textile collection includes pieces dating from approximately 700 to 500 B.C., as well as contemporary fabrics from the Andean highlands. Many of these are at present displayed in the second-floor Textile Galleries in the exhibition *2,000 Years of South American Weaving: Textile Art of Ancient Peru and Its Legacy*.

The examples range from complete ponchos in bright and intricate tapestry weave and large cobweb scarves of cotton gauze to tiny, exquisite fragments of once large mantles which wrapped the dead. Yet they in no way represent a complete exposition of all the textile styles known to have been produced throughout Peru's long history. The ROM's collection of Peru's ancient textiles, all of which have been recovered from burials, was acquired from several sources. Some pieces were donated in the early part of this century, a number of items were purchased from a dealer in Lima in the 1930s, and others were purchased or donated since then. The largest group came from the American Museum of Natural History in New York in 1919—the result of their early excavations in Peru. It includes a mummy wig of human hair and various mummy bundle accoutrements, disintegrated scraps of plainly woven grave cloths, and beautiful intricately plaited and finely woven pieces reflecting great skill.

During this century the textiles of Peru have increased in monetary value and become sought-after items on the art market. So copious was the output over the years, and so favourable the dry coastal climate for preservation, that the ruins or *huacas* dotting the country have become treasure troves for the grave robbers or *huaqueros*. No longer thrust aside in the frantic search for metals, precious textiles are now kept for sale, but lamentably in a sad state, since many have been rudely stripped from the mummy bundles. Some have even been cut into pieces so that the in-

Above: Bolivian highland boy from Potolo region spinning wool on a drop spindle, 1970s.

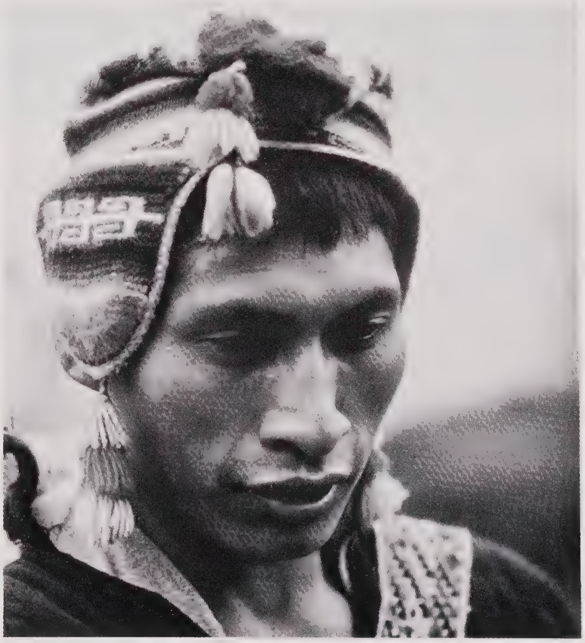
Right: Bolivian highland man from the Department of La Paz, 1970s.

dividual motifs could be sold separately. Often the finest examples turn up piece by piece in many of the major collections of the world.

International conventions, to which the ROM adheres, have been established to stop this illegal trade in national treasures, yet the deplorable practice of the *huaqueros* continues. Not only are perishable textiles frequently destroyed by rough handling, but their archaeological context is lost. We are often unable to say whether a piece came from the tomb of a noble complete with his retinue, or from the grave of a humble weaver surrounded by his tools. There may be confusion concerning the original site or even uncertainty about the general area. When textiles are found *in situ,* there may be items of ceramic, metal, bone, or wood with which to compare them. Moreover, knowledge of the type of interment and location within a site would aid greatly in placing finds in proper context. Despite this lack of evidence, careful comparison has been made of the fibre, spin, dye, weaving technology or construction, and differing motifs or iconography. Years of study by dedicated and enthusiastic scholars have helped document textile collections around the world, and by association with ancient Peruvian pottery and metalwork have helped determine time sequences and geographic distribution.

Clothing, generally of textile, was a necessity for the early inhabitants of Peru. Although the coastal area was dry, the cold Humboldt current just offshore created chill fogs, and the altitude of the inland areas definitely demanded the comfort of body wrappings. The first fibres to be used on the coast were bast or plant fibres and several forms of native cotton were cultivated as early as 3000 B.C. The highland areas used the wool of the native camelids—the domesticated llama and alpaca and the wild and silky vicuña. Sheep, a European introduction, were originally unknown in the New World. Evidence of camelid wool in coastal textiles appears about 700 B.C. By this time we can assume the necessary organization and population density for irrigating and cultivating extensive cotton areas in the lowlands, for herding the upland camelids, and for creating trading relations between the two regions.

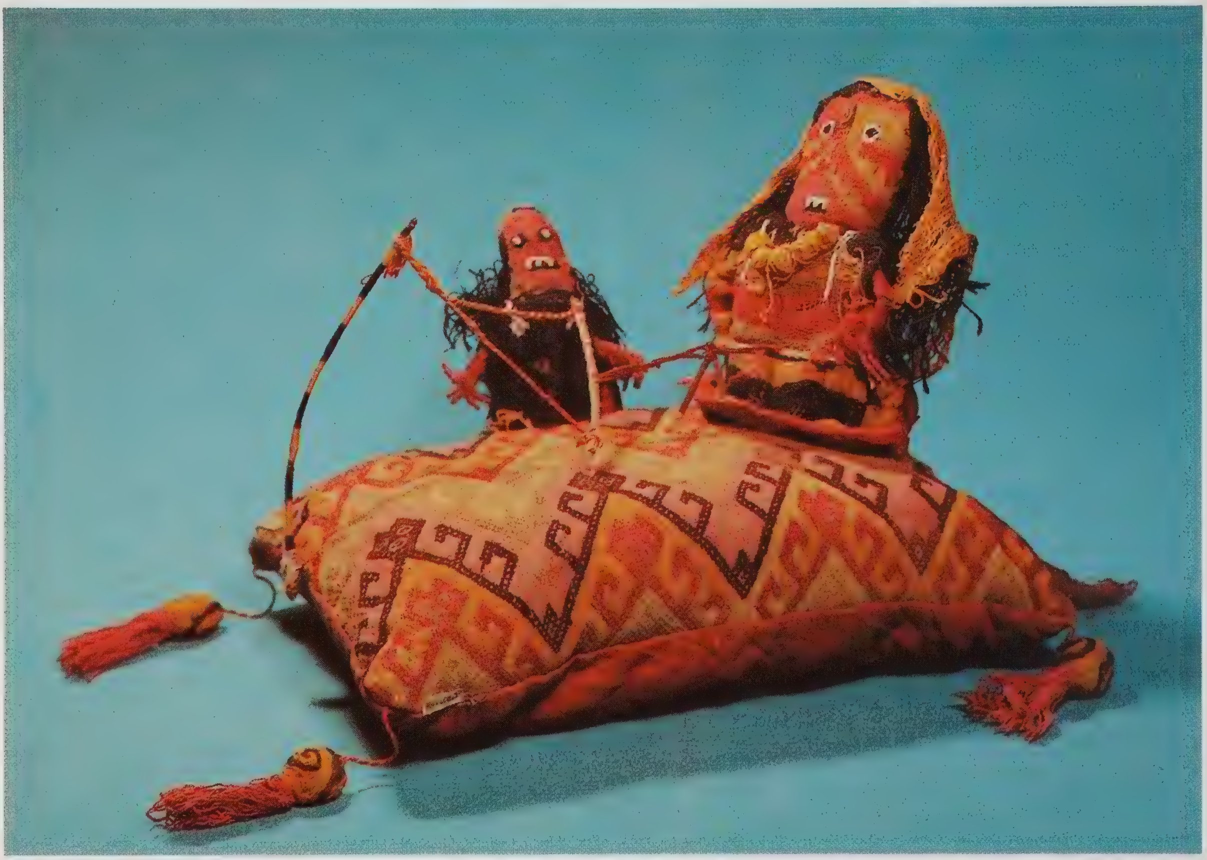
It was during this period that all the techniques known to the Peruvian weavers were developed. Although variants of style and combination shifted with cultural dictates, clothing remained a strong exemplifier of cultural precepts, both to codify and to promulgate the themes of the dominant authority or of a new military-religious empire. There was a plethora of bright and appealing weavings created, but perhaps these can best be appreciated through a brief description of the means of production. Cotton cultivation on the coast and camelid husbandry in the highlands required organized groups to gather, clean, comb, and distribute the product for use by the spinner. Spinning for utilitarian purposes was done in every ordinary



Above: Bolivian highland man from the Department of La Paz, 1970s.

Left: Bolivian highland man with feather hat, playing flute at festival. Calamarca region, 1970s.

Ancient Peruvian "tomb dolls" weaving, made to be included in the tomb of the deceased. Chimu Empire style, attributed to the central coast, possibly Chancay Valley. Late Intermediate period, c. A.D. 900–1476.

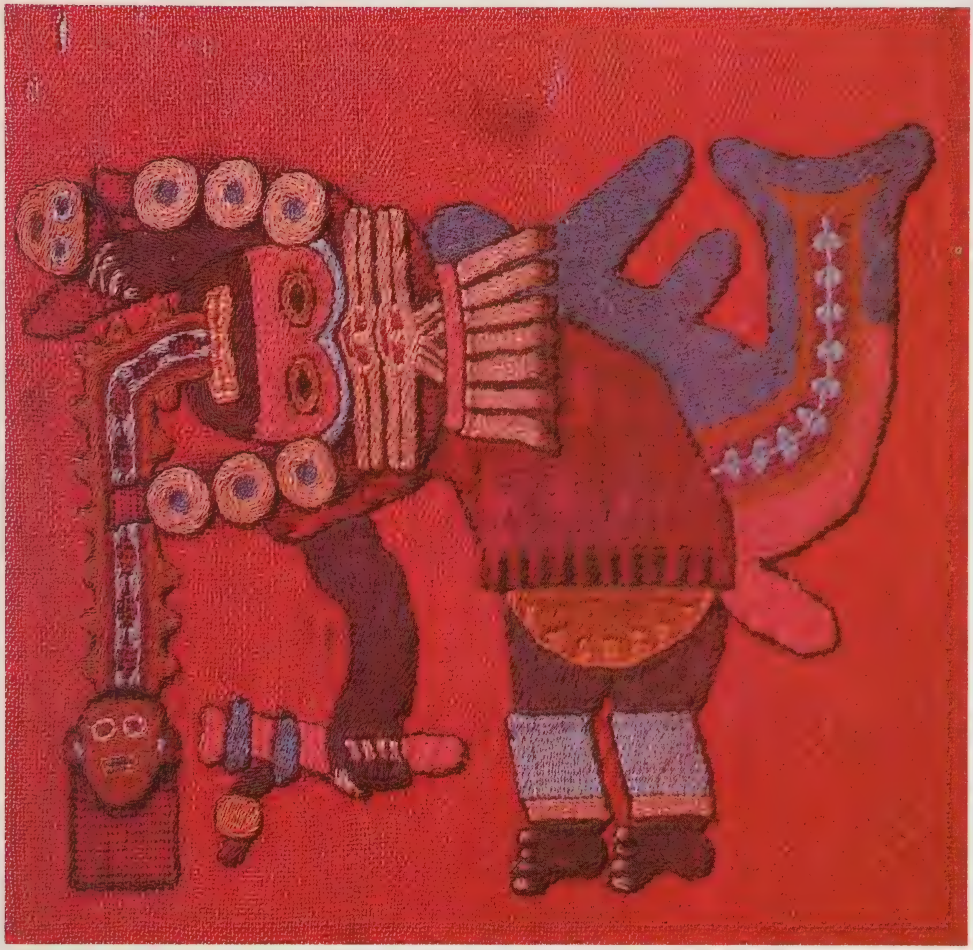


household, but fine spinning was the duty of special groups of skilled workers. Cotton, having a shorter staple or fibre length, did not lend itself to very fine threads, but wool was spun to an extreme, even fineness and then plied or doubled to create a still stronger thread of extreme fineness. There is such a fine, red wool strand in the exhibition. It is so thin that a magnifying glass is needed to tell that it is plied. Different spins could be used to create effects—for example, a fine, overtwisted thread to give a crêped finish to the cloth—or several colours could be plied together.

The use of dyes was another part of the process. Peruvian cotton grows in natural varieties of white and several shades of tan. Cotton does not take natural dyes easily, except for indigo and shades of brown. Camelid wool, however, naturally occurring in shades of white, brown, grey, and black, takes dyes well, and many hues were fixed with mordants so skilfully that their fresh colour has endured over the centuries. The main colour sources were indigo for blue, insect cochineal for red, and various vegetable substances for yellows. Combinations created a rainbow of variations.

At every stage in the manufacturing process there were distributors who saw that the raw and partially finished materials went from group to group and finally into the hands of the weaver. Working in supervised groups on looms more fundamental than the treadle looms of today's craftsmen, the Peruvian weavers demonstrated the consummate skill of the textile art. The looms were body-tension backstrap looms, with the warp beam—the transverse beam farthest from the weaver—attached to ground stakes or a house post. Parallel to this was the breast beam which rested in the weaver's lap. A strap from the breast beam went round her back so that when she leaned forward to manipulate the warp threads stretched between the beams, the tension was released and the threads were workable. The horizontal weft thread was passed back and forth through various manipulations of the longitudinal warp threads, creating the patterned cloth.

These patterns, often laid down by religious and social dictates, were fully determined and plotted out in advance. Large pieces were truly a cooperative effort, often requiring several carefully matched loom pieces to create a large and predetermined whole.



Left: Ancient Peruvian priest-animal-deity figure with ceremonial axe, human trophy head, and snake-like tongue ending in trophy head. Embroidered motif on mummy wrapping. Paracas culture, south coast, Early Horizon c. 900–400 B.C.

Below: Rough terrain and terraced hillsides in the Charazani region of the Bolivian highlands.

These large and impressive cloths were often intricately decorated with brightly coloured symbols of the ruling empire or dominant culture. In 1925, on a desolate strip of the Paracas Peninsula, Julio C. Tello, a Peruvian archaeologist, found the source of large embroidered wrappings which had come on the market. In subterranean buildings in a hillside were more than 400 large mummy bundles wrapped in layer upon layer of beautiful fabrics. This culture, which he named Paracas Cavernas, is dated to approximately 700 to 400 B.C. The ROM's Textile Department is fortunate in having three large examples of these wrappings, at present framed and mounted on the gallery wall; they measure approximately 4 feet by 8 feet and 5 feet by 10 feet. Two are covered with a chequerboard of fantastic priest-animal-deity figures, each holding a human trophy head by the hair. They are representative of the Paracas trophy head cult with its complex organization of priests, temple centres, and human sacrifices, all of which existed more than 2,500 years ago.

There are many more pieces in the exhibition representing later Peruvian cultures such as the Nasca, c. 400 B.C. to A.D. 500. One of these, a unique Peruvian

Above: Bolivian highland man from the Tarabuco region wearing hand-woven poncho, 1970s.

Right: Bolivian highland woman from the Charazani region carrying goods in hand-woven carrying cloth, 1970s.

technique worked in wool around a fibre core, is called variously single-needle knitting or cross-knit looping. This example is a three-dimensional grape cluster of birds and flowers, and if one looks closely one can see projecting from the profusion of tendrils the head of a tiny multicoloured bird celebrating life in a culture no longer linked to human sacrifice. There are as well examples of the Huari culture which rose in the highlands to influence the whole of the coast from approximately A.D. 500 to 900, pieces in bold geometric designs and a range of subtle colours. The next civilization, the Chimu, appeared on the north coast from approximately A.D. 900 to 1476, and influenced the Chancay culture on the central coast and the Ica on the south. There are airy tabby-weave and gauze-weave "shawls", tie-dyed in shades of tan; openwork with solid segments in the form of pelicans, fishes, and other zoomorphs; and some pieces of brightly coloured figured tapestry weave so fine that one has more than 95 warp threads per two square centimetres. Fine doublecloth and bright tie-dye patchwork pieces are but a few more of the examples.

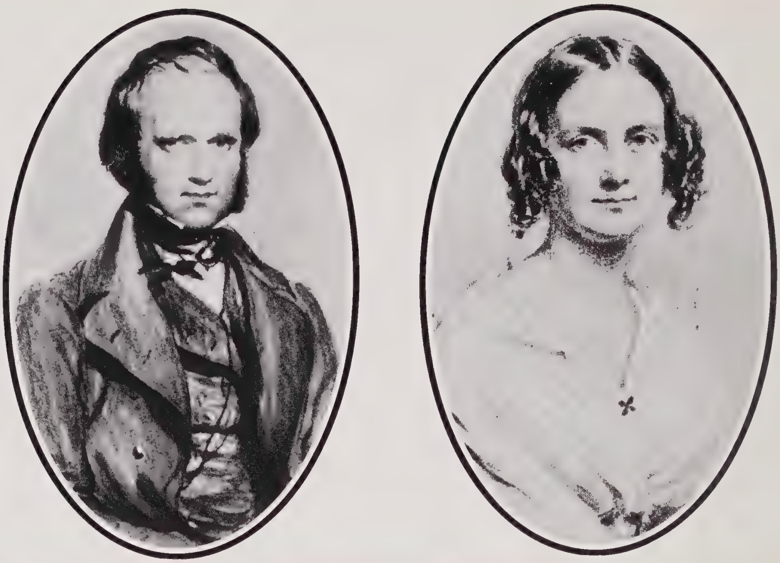
Most noticeable perhaps are the three-dimensional tomb dolls, of which there are several in the exhibition. Seated on a decorated pillow are a weaver and her assistant, one doll operating a backstrap loom suspended from a stake while her helper steadies it. Tomb dolls are a highly appealing and saleable item and their authenticity is often suspect as it is possible for them to be made up by a dealer from scraps of grave fabrics. The main doll in this example, however, has clothing and facial features woven to fit her, a fact that seems to suggest authenticity, although the assemblage on the pillow may be suspect. Another intriguing item from the Chancay culture, c. A.D. 1400, is a rectangular piece of partially completed fabric known as a "tomb loom". Believed to have been commissioned for the dead to accompany them in the afterlife, these brightly patterned pieces, in a variety of techniques, are often unfinished and have had the loom beams and heddles removed before interment. This example is presumably a sampler for the deceased, and has motifs of pelicans and cats in a supplemental weft weave and a row of sprightly hatted monkeys beneath an eroded row of humanoid figures in a detailed tapestry weave.

The next and last great Peruvian empire was that of the Inca. They reigned for a relatively short time, however, conquering the Ica Valley in 1476, only to fall to the Spanish in 1534. Spanish rule took its toll in population and traditions, especially on the coast, yet in the mountain remoteness some of the old ways managed to endure. One of these was the methods and patterns of weaving with the body-tension loom. There are in the exhibition several bold Inca ponchos which can be compared with those of the present-day people around Lake Titicaca, the Altiplano of Peru and Bolivia. The many bright modern examples attest to a tradition surviving into the 20th century, although even now disappearing. Frets and condors reminiscent of the ancients embellish the work, as they do the skilled weavings from the region of Potolo and Charazani. Some of the intricate Potolo weavings depict fantastic cat-monkey creatures and one in the exhibition even has fanciful birds in its belly.

The best of these were woven for weddings and other special occasions and are handed down through the generations and even lent or rented for such ceremonies. Sheep's wool is the major source of fibre in the highlands and although the skilful use of natural dyes is gradually giving way to the modern aniline varieties, spinning and weaving still proceed in the old way with the hand or drop spindle and a body-tension loom. The complicated techniques of warp-patterning are still alive, although style and technique vary with the region. Each area has a specific and identifiable type of woven motif, colour combination, and variation of costume. Although the inroads of western dress follow the cash economy and its demands, these treasured weavings are still proudly worn at special markets and fiestas. Thus it is that from the cultivation of cotton on the coast of Peru some 5,000 years ago, the traditions and techniques of clothing the human body with beautifully crafted fabric have reached into the 20th century to be preserved and presented as material evidence of man and his humanity.

Bolivian highland woman resting on her doorstep, 1970s.

Liz Lewis first joined the ROM *in 1966 and worked in both the Canadiana Department and the Textile Department, where she took part in the Canadian textile exhibition* Keep Me Warm One Night. *From 1972 to 1977 she was a student at the University of Toronto, where she obtained a B.A. and an M.A. in anthropology. During her master's program she worked part-time in the Textile Department on a major exhibition,* In the Presence of the Dragon Throne. *In the fall of 1977 she returned full-time to help transfer the department's records to computer and to work with the department's Peruvian collection. She researched in the United States and Europe and mounted the current exhibition of Peruvian and Bolivian material. At present she is involved in preparing a* catalogue raisonné *of these collections.*



Right: Charles and Emma Darwin shortly after their marriage in 1839.

Evolution of an Evolutionist

Books That Influenced Charles Darwin

Gene Wilburn

WHEN CHARLES DARWIN, coformulator of the theory of natural selection, died in 1882, he left behind a large personal library in his study at Down House. His son Francis, sensing the historical importance of the collection, donated it to Cambridge University where it was preserved and catalogued. Darwin's library, containing as it does his personal notes on flyleaves and scribbled annotations in margins, has been a rich source of knowledge on how Darwin thought and on how his reading influenced the development of his theory. Moreover, the titles of the books in his library indicate the intellectual milieu in which Darwin, the staid Victorian, toiled—and succeeded, to his horror, in shaking the very foundations of the society he held dear.

We may guess much about the character of a man by the books he reads. Darwin's library reveals his nature so clearly that no account of his life and thought is complete without reference to the extensive degree to which books shaped his life. A brief look at Darwin's career shows us an individual with a compelling interest in ideas, which grew until his life became inextricably intertwined with his reading. The lifetime aggregate of his reading, preserved in his library, enables the historian to extrapolate influences and links in much the same manner as the palaeontologist "reads" the fossil record to reconstruct earlier eras. In looking at Darwin's life through his library, it is necessary here to confine ourselves to the highlights, for Darwin's reading was extensive and to examine it in depth would be a major undertaking.

Darwin described himself as having been "a very ordinary boy" and a look at his academic career from public school through university bears out his assessment. He showed no particular aptitude for his studies and he spent much of his time shooting and riding. Yet for such an ordinary person to have become one of history's most significant natural historians, there must have been a latent element in his personality waiting for the right circumstances in which to de-

Right: Down House, "Darwin Museum", in the village of Downe, Kent. This was the home of the Darwins from 1842 and the site of Darwin's major work and study.

Opposite page: Darwin's study in Down House.

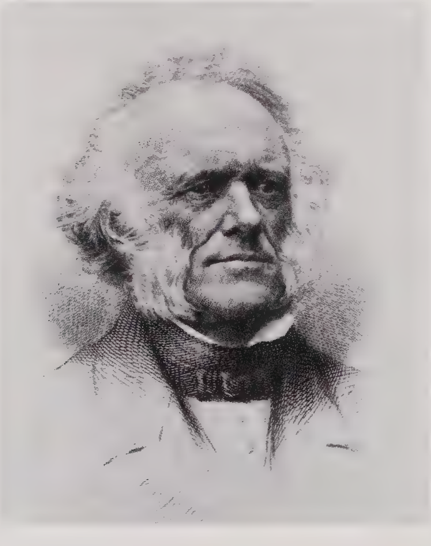
velop. There are several clues that this was so, not the least being that Darwin was an inveterate collector and a natural observer from an early age. One of his favourite books early in life was Gilbert White's *Natural History of Selborne*. Darwin read this enthusiastically while attending Shrewsbury Grammar School and immediately began studying the habits of birds. He became so interested in this activity that he "wondered why every gentleman did not become an ornithologist". Later he began to collect beetles—an activity he continued through his undergraduate days at Cambridge. One of the proudest moments resulting from his beetle collecting at Cambridge was the publication of James Stephens's *Illustrations of British Entomology*, in which one beetle was identified as "captured by C. Darwin".

His stay at Cambridge was undistinguished, but his time there was highly formative. As part of his studies for the ministry he was required to read and answer examination questions on William Paley's *Evidences of Christianity*. Darwin was delighted with its logic, which he found to be almost as convincing as Euclid's, and historians have since pointed out significant influences of the style and tone of *Evidences* in Darwin's own writing. But Darwin's most formative reading at Cambridge was not so much in theology as in natural history. This was due largely to his meeting John Henslow, an Anglican clergyman and professional botanist who lectured at Cambridge. Henslow became Darwin's friend and mentor and the two took long walks in the countryside where Henslow encouraged Darwin's interest in collecting.

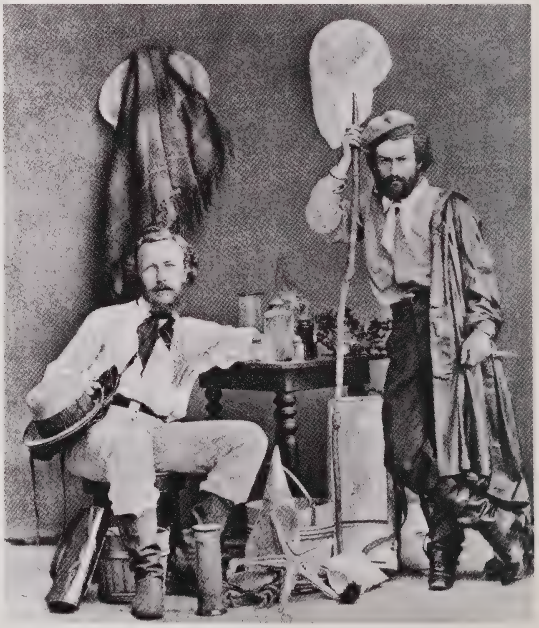
Their discussions on the natural history of the surrounding countryside undoubtedly reflected the orthodox church view of the natural world that revered Linnaeus as one who brought order out of chaos and revealed the clarity and symmetry of God's work in the biological sphere. Henslow certainly influenced Darwin to read the works of Cuvier, the French biologist who insisted that no living beings had changed since the Creation. Cuvier taught that evolution was a disreputable speculation, and although Lamarck had published an evolutionary theory of sorts that Darwin may have read at this time, Lamarck was not taken seriously at Cambridge.

Henslow's influence on Darwin was benign and enduring. He not only taught Darwin the methods of careful observation, he introduced him to two works that Darwin later identified as the two books that had had the greatest influence on him. One, Sir John Herschel's *Preliminary Discourse on the Study of Natural Philosophy* emphasized logic, analysis, analogy, and the careful verification of any hypothesis. The other, Alexander von Humboldt's *Personal Narrative*, gripped Darwin's imagination differently. Von Humboldt's account of his service as a ship's naturalist flamed a similar ambition in Darwin. He was so taken with the account that he read it aloud to his friends and copied long passages from it.

That Darwin's interest in becoming a ship's naturalist was to be realized was ironic and fateful. With an undistinguished degree in theology and no real scientific training, it seems remarkable that he could have become a successful candidate for such a venture. Here his friend Henslow intervened and convinced Captain Robert Fitzroy of the H.M.S. *Beagle* that Darwin was a gifted observer, full of promise. After some initial difficulties in convincing first Fitzroy, and then his own father, that he was the appropriate person for the position, Darwin sailed into history as the



Above: Sir Charles Lyell. His Principles of Geology *taught Darwin how to think scientifically.*



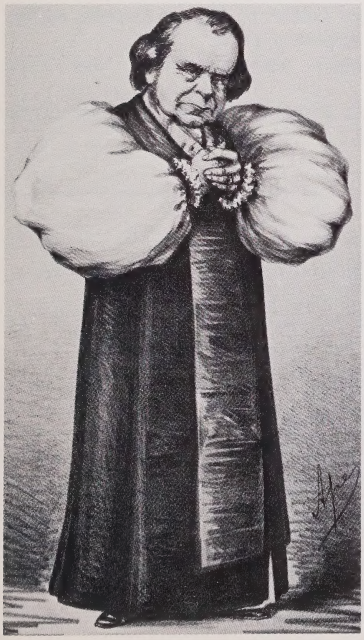
Beagle's naturalist. Darwin took along at least three volumes to read on the voyage. The first was the Bible. Darwin was strongly religious at the beginning of the voyage, and this suited the pious Fitzroy with whom Darwin shared a cabin. The second was Cuvier's *Essay on the Theory of the Earth* which justified anomalies and peculiarities in the fossil record by connecting them with biblical catastrophes. The third book, just off the press, was given to Darwin by Henslow as a parting gift: volume one of Sir Charles Lyell's *Principles of Geology*.

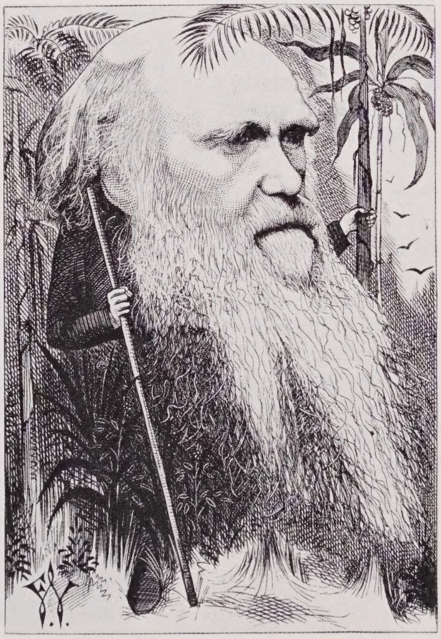
Henslow encouraged Darwin to read Lyell but warned him not to believe him, as Lyell's work contradicted Cuvier's. Darwin did more than read it; he assimilated it so thoroughly that it became the most important link in the chain leading to *Origin of Species*, for Lyell, it is said, taught Darwin not only how to think about geology, but how to think. Through the study of Lyell's work Darwin came to see nature as logical, regular, and self-explanatory, not requiring appeal to divine intervention. Moreover, Darwin acquired through Lyell an evolutionary point of view with regard to geology which he later transferred to his own view of nature.

Darwin's five years aboard the *Beagle* are well documented and we are familiar with his careful observations and his extensive collecting. We also know that he returned home a different person, and that his faith in the Bible as literal truth was shaken as a result of his observations, thoughts, and reading. This posed a problem as he became a mature scientist, for his family and most of his scientific colleagues retained a literal faith in the Bible that made it difficult for him to communicate and discuss openly some of his fledgling theories and ideas. A somewhat shy man by nature, he had no desire to disturb the faith of others. For this reason, he avoided public disturbance by not publishing his revolutionary theory on natural selection for more than 20 years after the date of his return on the *Beagle*.

During the intervening time, he married Emma Wedgwood, moved to Down House in Downe, Kent, started a family, continued his scientific work, and read. He read the *Times* daily and occasionally he read poems, such as Wordsworth's *The Excursion*. Novels were read aloud in the drawing room at Down House, and Darwin frequently read novels to his children. He was especially fond of Sir Walter Scott. Darwin did his serious reading in his study where he housed his academic library. He was an active scholar, but no respecter of books. They were merely tools to be used. If a book was too heavy for him to read comfortably while lying on his couch, he simply cut the book in half. If a paper book fell to pieces from use, he clamped it together with a metal clip over its back. Pamphlets were treated even more severely. For the sake of saving space, he would tear out all the pages except the ones that interested him.

Above all, the period between his return on the *Beagle* and the publication of *Origin of Species* was a period of assimilation. Darwin's age, philosophically, was one in which old notions concerning God and human responsibility were being subjected to fundamental criticism and reformulation. Darwin's insight into the probable furore his theory could create, if published, led him to explore philosophical systems of thought in an attempt to gain fresh and important perspectives from which to interpret the significance of his theory of the transmutation of species. His library contained works by most of the current phi-





Opposite page, right: Ernst Haeckel (left) and a friend on a collecting trip in Italy. Called the "Darwin of Germany", Haeckel championed Darwin's theory and made several visits to Down House.

Left: Bishop Wilberforce, who led the Church of England's attack on Darwinism. This is one of a series of caricatures that appeared in Vanity Fair *at the height of the controversy over Darwin's theory.*

Right: Darwin was frequently subjected to caricature in the press. This cartoon appeared in the London Sketch Book *in the 1860s.*

losophers: Hume, Stewart, Comte, Whewell, Herschel, Mackintosh, Hartley, Martineau, Smart, and Abercrombie. Many of these works are highly annotated. He read Malthus and adapted several of his ideas. Darwin appropriated from Malthus the expressions "struggle for existence" and "struggle for life".

During this time Darwin was also reading as many publications in natural science as he could. His library shelves abounded with the works of his scientific friends and colleagues, such as Thomas Huxley, Charles Lyell, Joseph Hooker, Asa Gray, and Robert Brown. Darwin also worked his way through many scientific works in German—a language he taught himself for reading purposes.

By 1858 Darwin had achieved a solid reputation as a scientist from his own various publications. Only a few of his closest colleagues knew he was sitting on an important evolutionary theory, and even they did not realize the full extent of its revolutionary character. Darwin might have kept his ideas to himself much longer if it had not been for an extraordinary coincidence. Another ship's naturalist, Alfred R. Wallace, independently formulated the same theory of natural selection Darwin had been working on for 20 years. The die was cast; Darwin could no longer keep his ideas private. In a display of scientific courtesy, Darwin invited Wallace to share in a joint publication that would outline the theory and establish Darwin and Wallace as its coformulators. Wallace accepted. One year later, in 1859, Darwin finally published his full version of the theory under the title *Origin of Species.*

Origin of Species, often referred to as the most important book of the 19th century, brought Darwin overnight notoriety. The Victorian public misinterpreted his theory to read "man descended from the ape." The press and pulpit erupted in indignation—just as Darwin had feared—and both Darwin and the theory were lampooned in numerous cartoons and satires. This public indignation culminated in the famous debate in which Thomas Huxley, "Darwin's bulldog", scored so brilliant and dramatic a victory over Bishop Wilberforce that the Church of England ended its public challenge of Darwin's theory.

Darwin stayed out of the public fray and, as quietly as he could, continued his scientific work, his writing, and his reading. His theory became tagged "Darwinism" and it attracted many scientific allies whose own works continued to influence Darwin as each one found its way to his library shelves. A volume of special interest in Darwin's library is a copy of Marx's *Das Kapital.* Marx had been highly impressed with *Origin of Species,* seeing in it strong implications for his own social and economic theories. He paid Darwin the compliment of offering to dedicate *Das Kapital* to him. While Darwin politely refused, he nonetheless kept a copy on his shelf.

By the end of his life, Darwin had, in addition to formulating one of history's great theories, completed a distinguished, exemplary scientific career. When he died in 1882, he was buried with royal ceremony and honour in Westminster Abbey. Down House, his home during most of his career, was eventually restored and is now called the Darwin Museum. A large portion of his library has been returned to the shelves of his study where the visitor may look at the books and speculate on the atmoshphere that surrounded Darwin as he wrote. Darwin's books served as silent voices that guided him on his unique odyssey and without doubt his library was one that changed the course of scientific thought.

Selected References

Atkins, H. *Down: The Home of the Darwins.* London, Royal College of Surgeons, 1974.

Chancellor, J. *Charles Darwin.* London, Weidenfeld and Nicolson, 1973.

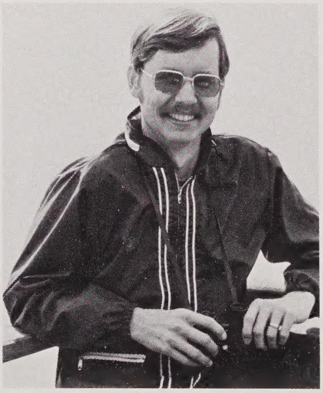
Darwin, C. *Catalogue of the Library of Charles Darwin now in the Botany School, Cambridge,* comp. by H.W. Rutherford. Cambridge, University Press, 1908.

Darwin, C. *The Life and Letters of Charles Darwin,* ed. by F. Darwin. New York, Appleton, 1896.

Irvine, W. *Apes, Angels, and Victorians.* New York, McGraw-Hill, 1955.

Manier, E. *The Young Darwin and His Cultural Circle.* Boston, D. Reidel, 1978.

Gene Wilburn is Head Librarian of the ROM. *His combined interest in libraries and in natural history led him to explore the subject of Darwin's library and the impact of Darwin's reading on his theory of natural selection. The preceding article was based on Mr. Wilburn's presentation of the 1979 Charles Darwin Memorial Lecture, a series of annual lectures sponsored by the Museum's Department of Botany and hosted, February 12, 1979, by the Department of Invertebrate Palaeontology.*



ROM